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SEARCH REQUEST FORM

Scientific and Technical Information Center

97045

Requester's Full Name: HELEN PEZZUTO Examiner #: 70058 Date: 6/17/03
Art Unit: 1713 Phone Number 30 8-2393 Serial Number: 101051423
Mail Box and Bldg/Room Location: CP3-8B16 Results Format Preferred (circle): PAPER DISK E-MAIL

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: See ATTACHED

Inventors (please provide full names): ↓

Earliest Priority Filing Date: 2/01/02

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

N,N-dialkyl alkoxyamines as shown in structure (II) in claim 2 & structure (I) in claim 3. Nanomer species are in claim 4-5 compound is used as a free radical initiator for polymerization of (meth)acrylic acid or esters thereof. (see claim 10)

Key words:

initiator, coating, powder coating

Please attach search report & pages submitted herein. Thanks!

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Type of Search	Vendors and cost where applicable
Searcher: <u>K. Fuller</u>	NA Sequence (#) <u>STN</u> <u>6/19/03</u>
Searcher Phone #:	AA Sequence (#) <u>Dialog</u>
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Online Time: <u>69</u>	Other <u>Other (specify)</u>

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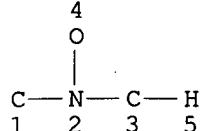
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L10 SCR 2016 OR 2021
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RING(S) ARE ISOLATED OR EMBEDDED
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STEREO ATTRIBUTES: NONE

L15 8770 SEA FILE=REGISTRY SSS FUL L12 AND L10
 L16 STR

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NODE ATTRIBUTES:

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GRAPH ATTRIBUTES:

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L18 5340 SEA FILE=REGISTRY SUB=L15 SSS FUL L16
 L19 3430 SEA FILE=REGISTRY ABB=ON L15 NOT L18
 L20 2059 SEA FILE=HCAPLUS ABB=ON L19
 L21 18 SEA FILE=HCAPLUS ABB=ON L20(L) INITIAT?
 L22 36 SEA FILE=HCAPLUS ABB=ON L20 AND FREE?(3A) RADICAL?(L) POLYMERI?
 L23 47 SEA FILE=HCAPLUS ABB=ON L20 AND ?ACRYL?(L) POLYMERI?
 L25 2 SEA FILE=HCAPLUS ABB=ON L23 AND COAT?/SC, SX, AB, BI
 L26 34 SEA FILE=HCAPLUS ABB=ON L23 AND (FREE?(3A) RAD? OR INITIAT?)
 L27 58 SEA FILE=HCAPLUS ABB=ON L20(L) CAT/RL
 L28 38 SEA FILE=HCAPLUS ABB=ON L23 AND L27
 L29 61 SEA FILE=HCAPLUS ABB=ON L21 OR L22 OR L25 OR L26 OR L28
 L30 23 SEA FILE=HCAPLUS ABB=ON L23 AND INITIAT?
 L31 61 SEA FILE=HCAPLUS ABB=ON L29 OR L30
 L32 59 SEA FILE=HCAPLUS ABB=ON L31 AND (POLYMER? OR PLASTIC?)/SC, SX

=> D L32 ALL HITSTR 1-59

L32 ANSWER 1 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2003:301111 HCAPLUS
 DN 138:321747
 TI Controlled copolymerization processes in the presence of monomer-containing complexes
 IN Matyjaszewski, Krzysztof; Kirci, Betul; Lutz, Jean-Francois; Pintauer, Tomislav
 PA Carnegie Mellon University, USA
 SO PCT Int. Appl., 69 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C08F004-00
 CC 35-4 (Chemistry of Synthetic High Polymers)

Subset search to remove heterocyclic rings

3, 430 structures

59 CA references with utility

Section cross-reference(s): 29, 67
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003031480	A2	20030417	WO 2002-US32526	20021011
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI US	2001-329210P	P	20011012		
AB	A polymn. process comprises polymg. first monomers and second monomers under controlled polymn. conditions in the presence of a complex comprising at least one of the monomers. The presence of the complex modifies the relative reactivity, or cross propagation rate consts., of the monomers in copolyrn. reactions. The method provides polymers with novel stereochem. and monomer sequence distribution, controlled mol. wt. and narrow mol. wt. distribution. Thus, a complex comprising Me methacrylate (1.86) and diethylaluminum chloride (0.89) was prep'd. and used in RAFT copolyrn. of styrene (1.93 g) and Me methacrylate , the polymn. being carried out at 60.degree. in the presence of AIBN and cumyl dithiobenzoate. Well-defined alternating Me methacrylate -styrene copolymer of controlled mol. wt. (20,000 g/mol), low polydispersity (Mw/Mn = 1.38) and controlled comonomer sequences (86.8% of alternating triads) was produced.				
ST	monomer Lewis acid complex catalyst controlled RAFT polymn				
IT	Chain transfer agents				
	Polymerization				
	Polymerization catalysts				
	(controlled copolyrn. processes in presence of monomer-contg. complexes)				
IT	Lewis acids				
	RL: CAT (Catalyst use); USES (Uses)				
	(controlled copolyrn. processes in presence of monomer-contg. complexes)				
IT	75-47-8, Iodoform 78-67-1, AIBN 96-10-6D, Diethylaluminum chloride, complexes with acrylates 624-75-9, Iodoacetonitrile 2564-83-2, TEMPO 12075-68-2D, Ethylaluminum sesquichloride, complexes with acrylates 188526-94-5, SG 1 201611-77-0, Cumyl dithiobenzoate				
	RL: CAT (Catalyst use); USES (Uses)				
	(controlled copolyrn. processes in presence of monomer-contg. complexes)				
IT	117894-30-1P, Methyl acrylate-styrene alternating copolymer 511313-38-5P				
	511313-39-6P				
	RL: IMF (Industrial manufacture); PREP (Preparation)				
	(controlled copolyrn. processes in presence of monomer-contg. complexes)				
IT	62694-18-2P, 1-Hexene-methyl methacrylate copolymer 107493-06-1P				
	108266-99-5P, Methyl methacrylate-styrene alternating copolymer				
	RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)				
	(controlled copolyrn. processes in presence of monomer-contg. complexes)				
IT	96-33-3, Methyl acrylate 143-66-8, Sodium tetraphenylborate 3030-47-5,				

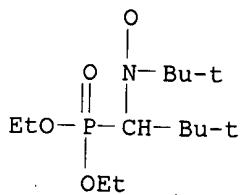
PMDETA, 7681-65-4, Copper monoiodide 7787-70-4, Copper monobromide
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (in synthesis of monomer-contg. complexes for controlled copolyrn.
 processes)

IT 511312-41-7P 511312-43-9P
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);
 USES (Uses)
 (synthesis of monomer-contg. complexes for controlled copolyrn.
 processes)

IT 474267-90-8P 511312-39-3P
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PRP (Properties);
 PREP (Preparation); USES (Uses)
 (synthesis of monomer-contg. complexes for controlled copolyrn.
 processes)

IT 188526-94-5, SG 1
 RL: CAT (Catalyst use); USES (Uses)
 (controlled copolyrn. processes in presence of monomer-contg.
 complexes)

RN 188526-94-5 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)



L32 ANSWER 2 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2003:222776 HCAPLUS
 DN 138:385804
 TI In situ FTIR monitoring of alkyl acrylate stable free
 radical polymerizations
 AU Lizotte, Jeremy R.; Long, Timothy E.
 CS Department of Chemistry and the Center for Adhesive and Sealant Science,
 Virginia Polytechnic Institute and State University, Blacksburg, VA,
 24061-0212, USA
 SO Polymeric Materials Science and Engineering (2003), 88, 471-472
 CODEN: PMSEDG; ISSN: 0743-0515
 PB American Chemical Society
 DT Journal; (computer optical disk)
 LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 AB The focus of this presentation is to demonstrate the utility of in situ
 FTIR spectroscopy in the investigation of the SFRP of alkyl
 acrylates. In addn., the synthesis of a previously described
 nitroxide mediator, N-tert-butyl-N-[1-diethylphosphono(2,2-
 dimethylpropyl)]nitroxide (DEPN), is studied using FTIR. The homopolyrn.
 kinetics were investigated to elucidate the effect of alkyl ester chain
 length on polyrn. rate. Also, the copolyrn. of multiple
 acrylate monomers was examd. with an emphasis on hydroxyethyl
 acrylate copolyrnns. for the prepn. of adhesive compns.
 ST stable free radical polyrn catalyst

nitroxide prepn; alkyl acrylate polymer kinetics in situ FTIR monitoring

IT Nitroxides
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(prep. of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymers.)

IT Polymerization
Polymerization catalysts
Polymerization kinetics
(radical; prep. of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymers.)

IT 100-42-5, Styrene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(for comparison; prep. of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymers.)

IT 9003-53-6P, Polystyrene
RL: SPN (Synthetic preparation); PREP (Preparation)
(for comparison; prep. of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymers.)

IT 75-64-9, tert-Butylamine, reactions 630-19-3, Pivaldehyde 762-04-9,
Diethyl phosphite
RL: RCT (Reactant); RACT (Reactant or reagent)
(in prep. of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymers.)

IT 937-14-4, m-Chloroperoxybenzoic acid
RL: RGT (Reagent); RACT (Reactant or reagent)
(in prep. of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymers.)

IT 188526-94-5P, N-tert-Butyl-[1-diethylphosphono(2,2-dimethylpropyl)]nitroxide
RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(prep. of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymers.)

IT 103-11-7, 2-Ethylhexyl acrylate 1663-39-4, tert-Butyl acrylate
RL: RCT (Reactant); RACT (Reactant or reagent)
(prep. of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymers.)

IT 9003-77-4P, Poly(2-Ethylhexyl acrylate) 25232-27-3P, Poly(tert-butyl acrylate) 36089-45-9P, 2-Ethylhexyl acrylate-2-hydroxyethyl acrylate copolymer
RL: SPN (Synthetic preparation); PREP (Preparation)
(prep. of nitroxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymers.)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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 (13) Wang, J; J Am Chem Soc 1995, V117, P5614 HCPLUS

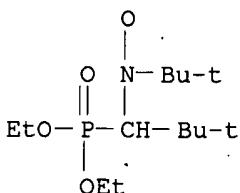
IT 188526-94-5P, N-tert-Butyl-[1-diethylphosphono(2,2-dimethylpropyl)]nitroxide

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(prepn. of nitoxide initiator for in situ FTIR monitoring of alkyl acrylate stable free radical polymers.)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 3 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2003:222695 HCPLUS

DN 138:385801

TI Automatic continuous online monitoring of polymerization reactions (ACOMP) adapted to high viscosity reactions

AU Mignard, Emmanuel; Guerret, Olivier; Bertin, Denis; Reed, Wayne F.
 CS Physics Department, Tulane University, New Orleans, LA, 70118, USA
 SO Polymeric Materials Science and Engineering (2003), 88, 314-316
 CODEN: PMSEDG; ISSN: 0743-0515

PB American Chemical Society

DT Journal; (computer optical disk)

LA English

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36

AB ACOMP was adapted to following polymn. reactions that reach high viscosity; tens of thousands of centipoise. This required introduction of either peristaltic or gear pumps, in addn. to the HPLC pumps previously used. Expanding ACOMP to high viscosities considerably broadens the range of the technique. Its use is illustrated here to follow bulk polystyrene reactions. The initiator used, ter-amylperoxy 2-ethylhexylcarbonate, had a lifetime less than the period for total monomer conversion, leading to a 'dead-end' reaction, in which a finite amt. of monomer remained after the initiator was exhausted. The kinetics and mol. mass evolution revealed by ACOMP quant. follow the predictions of the quasi-steady state approxn. in the limit of short initiator lifetime. Addnl., high viscosity ACOMP was extended to nitroxide mediated homo- and copolymn. reactions using N-tertiobutyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide (SG1).

ST automatic continuous online monitoring polymn ACOMP high viscosity reaction

IT Viscosity

(automatic continuous online monitoring of polymn. reactions (ACOMP)
adapted to high viscosity reactions)

IT Polymer chains
(length; automatic continuous online monitoring of polymn. reactions
(ACOMP) adapted to high viscosity reactions)

IT Polymerization
Polymerization catalysts
(radical; automatic continuous online monitoring of polymn. reactions
(ACOMP) adapted to high viscosity reactions)

IT 70833-40-8, Tert-Amyl peroxy 2-ethylhexyl carbonate **188526-94-5**,
SG1
RL: **CAT (Catalyst use); USES (Uses)**
(automatic continuous online monitoring of polymn. reactions (ACOMP)
adapted to high viscosity reactions)

IT 9003-53-6P, Polystyrene 25767-47-9P, Butyl **acrylate**-styrene
copolymer
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(automatic continuous online monitoring of polymn. reactions
(ACOMP) adapted to high viscosity reactions)

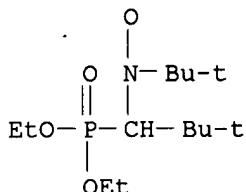
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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IT **188526-94-5**, SG1
RL: **CAT (Catalyst use); USES (Uses)**
(automatic continuous online monitoring of polymn. reactions (ACOMP)
adapted to high viscosity reactions)

RN 188526-94-5 HCPLUS
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)



L32 ANSWER 4 OF 59 HCPLUS COPYRIGHT 2003 ACS
AN 2003:188381 HCPLUS
DN 138:354320
TI Controlled Polymerization of Functional Monomers and Synthesis of Block
Copolymers Using a .beta.-Phosphonylated Nitroxide
AU Diaz, T.; Fischer, A.; Jonquieres, A.; Bremilla, A.; Lochon, P.
CS Equipe de Chimie Physique Organique et Colloiedale Unite Mixte de
Recherche CNRS-UHP 7565, Universite Henri Poincare-Nancy 1,

SO Vandoeuvre-les-Nancy, 239-54506, Fr.
 Macromolecules (2003), 36(7), 2235-2241
 CODEN: MAMOBX; ISSN: 0024-9297

PB American Chemical Society
 DT Journal
 LA English
 CC 35-4 (Chemistry of Synthetic High Polymers)
 AB 4-Vinylpyridine (4VP) and N,N-dimethylacrylamide (DMAA) were polymd. in a controlled manner using a .beta.-phosphonylated nitroxide (N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxide, commonly designated as DEPN) as a control agent. Compared to the results that had previously been reported for the nitroxide-mediated radical polymn. (NMRP) with 2,2,6,6-tetramethylpiperidine-1-oxyl (TEMPO), the polymn. of 4VP was much faster and very well controlled up to higher monomer conversions. Unlike 4VP, the controlled radical polymn. of DMAA using different types of nitroxides had so far remained limited to a very low conversion range (typically inferior to 10%). The use of DEPN gave rise to a very significant improvement of the NMRP of DMAA by providing a good reaction control up to high conversion (approx. 60%). For the first time, the ability of DEPN to control the homopolymn. of DMAA even at high conversion allowed the synthesis of poly(DMAA-b-4VP) block copolymers with a hydrophilic poly(DMAA) block which was longer than the poly(4VP) block. This particular feature should fairly improve the hydro-soly. of the derived amphiphilic cationic polymers, which can be obtained by simple quaternization of the former block copolymers, and extend the scope of their applications.

ST beta phosphonylated nitroxide catalyst dimethylacrylamide vinylpyridine block copolymer

IT Polymerization
 (bulk; controlled polymn. of functional monomers and synthesis of block copolymers using a .beta.-phosphonylated nitroxide)

IT Polyelectrolytes
 (cationic; controlled polymn. of functional monomers and synthesis of block copolymers using a .beta.-phosphonylated nitroxide)

IT Molecular weight
 Molecular weight distribution
 Quaternization
 (controlled polymn. of functional monomers and synthesis of block copolymers using a .beta.-phosphonylated nitroxide)

IT Polymerization catalysts
 (radical; controlled polymn. of functional monomers and synthesis of block copolymers using a .beta.-phosphonylated nitroxide)

IT 188526-94-5P, N-tert-Butyl-(1-diethylphosphono-2,2-dimethylpropyl)Nitroxide
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (controlled polymn. of functional monomers and synthesis of block copolymers using a .beta.-phosphonylated nitroxide)

IT 111-83-1DP, Octyl bromide, quaternization product with N,N-dimethylacrylamide-4-vinylpyridine block copolymer 112-82-3DP, Hexadecyl bromide, quaternization product with N,N-dimethylacrylamide-4-vinylpyridine block copolymer 143-15-7DP, Dodecyl bromide, quaternization product with N,N-dimethylacrylamide-4-vinylpyridine block copolymer 25232-41-1P, 4-Vinylpyridine homopolymer 26793-34-0P, N,N-Dimethylacrylamide homopolymer 321915-33-7DP, N,N-Dimethylacrylamide-4-vinylpyridine block copolymer, quaternization product with alkyl

bromides

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (controlled polymn. of functional monomers and synthesis of
 block copolymers using a .beta.-phosphonylated nitroxide)

IT 2564-83-2, 2,2,6,6-Tetramethylpiperidine-1-oxyl

RL: CAT (Catalyst use); USES (Uses)
 (for comparison; in controlled polymn. of functional monomers and
 synthesis of block copolymers using a .beta.-phosphonylated nitroxide)

IT 585-71-7, (1-Bromoethyl)benzene 3030-47-5, Pentamethyldiethylenetriamine
 227000-10-4

RL: RCT (Reactant); RACT (Reactant or reagent)
 (in prepn. of catalyst for controlled polymn. of functional monomers
 and block copolymers)

IT 37222-66-5, Oxone

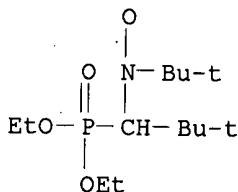
RL: RGT (Reagent); RACT (Reactant or reagent)
 (in prepn. of catalyst for controlled polymn. of functional monomers
 and block copolymers)

RE.CNT 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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 IT 188526-94-5P, N-tert-Butyl-(1-diethylphosphono-2,2-dimethylpropyl)Nitroxide
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (controlled polymn. of functional monomers and synthesis of block copolymers using a .beta.-phosphonylated nitroxide)
 RN 188526-94-5 HCPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 5 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 2003:98244 HCPLUS
 DN 138:272035
 TI Preparation of Polyacrylonitrile-block-poly(n-butyl acrylate) Copolymers Using Atom Transfer Radical Polymerization and Nitroxide Mediated Polymerization Processes
 AU Tang, Chuanbing; Kowalewski, Tomasz; Matyjaszewski, Krzysztof
 CS Center for Macromolecular Engineering Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA, 15213, USA
 SO Macromolecules (2003), 36(5), 1465-1473
 CODEN: MAMOBX; ISSN: 0024-9297
 PB American Chemical Society
 DT Journal
 LA English
 CC 35-4 (Chemistry of Synthetic High Polymers)
 AB The prepn. of block copolymers with acrylonitrile (AN) and Bu acrylate (n-BA) was examd. using two controlled radical polymn. (CRP) processes: atom transfer radical polymn. (ATRP) and nitroxide mediated polymn. (NMP). When crossing from poly(Bu acrylate) (PBA) to polymn. of AN, the use of halogen exchange in an ATRP process improved control of polymn. However, when switching from polyacrylonitrile (PAN) to n-BA, the cross-propagation was well controlled without halogen exchange. These differences in blocking efficiency can be explained by differences in the

bond dissochn. energy of the terminal carbon-halogen bond. In NMP, an efficient transition from a preformed PBA block to AN **polymn.** required the presence of excess of nitroxide. However, chain-extension from PAN to PBA, even under homogeneous conditions and with an excess nitroxide, was less efficient, and GPC traces showed bimodality.

ST prepn acrylonitrile butyl acrylate block copolymer ATRP radical nitroxide
IT **Polymerization**

(atom transfer, living, radical; prepn. of **acrylonitrile-n-Bu acrylate** block copolymers using ATRP and nitroxide mediated **polymn.** processes)

IT Reactivity ratio in **Polymerization**

(prep. of **acrylonitrile-n-Bu acrylate** block copolymers using ATRP and nitroxide mediated **polymn.** processes)

IT **Polymerization**

(radical, nitroxide mediated; prepn. of **acrylonitrile-n-Bu acrylate** block copolymers using ATRP and nitroxide mediated **polymn.** processes)

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide

RL: **CAT (Catalyst use); USES (Uses)**

(control agent; prepn. of **acrylonitrile-n-Bu acrylate** block copolymers using ATRP and nitroxide mediated **polymn.** processes)

IT 366-18-7, 2,2'-Bipyridine 3030-47-5

RL: **CAT (Catalyst use); USES (Uses)**

(ligand; prepn. of **acrylonitrile-n-Bu acrylate** block copolymers using ATRP and nitroxide mediated **polymn.** processes)

IT 78-67-1, Azobis(isobutyronitrile) 5445-17-0, Methyl 2-bromopropionate 7447-39-4, Copper chloride (CuCl₂), uses 7758-89-6, Copper chloride (CuCl) 7787-70-4, Copper bromide (CuBr) 19481-82-4, 2-Bromopropionitrile

RL: **CAT (Catalyst use); USES (Uses)**

(prep. of **acrylonitrile-n-Bu acrylate** block copolymers using ATRP and nitroxide mediated **polymn.** processes)

IT 9003-49-0P, Butyl **acrylate** homopolymer 25014-41-9P, **Acrylonitrile** homopolymer 25567-76-4P, **Acrylonitrile**-butyl **acrylate** copolymer

RL: **PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)**

(prep. of **acrylonitrile-n-Bu acrylate** block copolymers using ATRP and nitroxide mediated **polymn.** processes)

IT 137168-27-5P, **Acrylonitrilebutyl acrylate** block copolymer

RL: **SPN (Synthetic preparation); PREP (Preparation)**

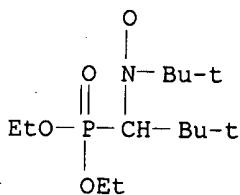
(prep. of **acrylonitrile-n-Bu acrylate** block copolymers using ATRP and nitroxide mediated **polymn.** processes)

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 IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide
 RL: CAT (Catalyst use); USES (Uses)
 (control agent; prepn. of acrylonitrile-n-Bu acrylate
 block copolymers using ATRP and nitroxide mediated polymn.
 processes)
 RN 188526-94-5 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 6 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2002:932221 HCAPLUS
 DN 138:170567
 TI Kinetic study of the nitroxide-mediated controlled free-

radical polymerization of n-butyl acrylate in aqueous miniemulsions

AU Farcet, Celine; Nicolas, Julien; Charleux, Bernadette

CS Laboratoire de Chimie Macromoleculaire, Unite Mixte de Recherche 7610, Universite Pierre et Marie Curie, Paris, 75252, Fr.

SO Journal of Polymer Science, Part A: Polymer Chemistry (2002), 40(24), 4410-4420

PB CODEN: JPACCEC; ISSN: 0887-624X

PB John Wiley & Sons, Inc.

DT Journal

LA English

CC 35-3 (Chemistry of Synthetic High Polymers)

AB The controlled free-radical homopolymer of Bu acrylate was studied in aq. miniemulsions at 112 and 125.degree. with a low molar mass alkoxyamine unimol. initiator and an acyclic .beta.-phosphonylated nitroxide mediator, N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxide, also called SG1. The polymers. led to stable latices with 20% solids and were obtained with neither coagulation during synthesis nor destabilization over time. However, in contrast to latices obtained via classical free-radical polymer., the av. particle size of the final latices was large, with broad particle size distributions. The initial [SG1]0/[alkoxyamine]0 molar ratio was shown to control the rate of polymer. The fraction of SG1 released upon macroradical self-termination was small with respect to the initial alkoxyamine concn., indicating a very low fraction of dead chains. Av. molar masses were controlled by the initial concn. of alkoxyamine and increased linearly with monomer conversion. The molar mass distribution was narrow, depending on the initial concn. of free nitroxide in the system. The initiator efficiency was lower than 1 at 112.degree. but was very significantly improved when either a macroinitiator was used at 112.degree. or the polymer. temp. was raised to 125.degree..

ST butyl acrylate emulsion radical polymer kinetics nitroxide control; polybutyl acrylate mol wt nitroxide controlled polymer

IT Polymerization kinetics
(emulsion, radical; nitroxide-mediated controlled free-radical polymer. kinetics of Bu acrylate in aq. miniemulsions)

IT Molecular weight distribution
(nitroxide-mediated controlled free-radical polymer. kinetics of Bu acrylate in aq. miniemulsions)

IT 300811-93-2, 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide
RL: CAT (Catalyst use); USES (Uses)
(initiator; nitroxide-mediated controlled free-radical polymer. kinetics of Bu acrylate in aq. miniemulsions)

IT 9003-49-0D, Poly(butyl acrylate), nitroxide-terminated
RL: CAT (Catalyst use); USES (Uses)
(macroinitiator; nitroxide-mediated controlled free-radical polymer. kinetics of Bu acrylate in aq. miniemulsions)

IT 188526-94-5, N-tert-Butyl-N-(1-diethylphosphono-2,2-dimethylpropyl)-N-oxyl
RL: RCT (Reactant); RACT (Reactant or reagent)
(mediator; nitroxide-mediated controlled free-radical polymer. kinetics of Bu acrylate in aq. miniemulsions)

IT 141-32-2, Butyl acrylate

RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (nitroxide-mediated controlled free-radical
 polymn. kinetics of Bu acrylate in aq. miniemulsions)

IT 9003-49-0P, Poly(butyl acrylate)

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (nitroxide-mediated controlled free-radical
 polymn. kinetics of Bu acrylate in aq. miniemulsions)

RE.CNT 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD

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IT 300811-93-2, 3,7-Dioxa-4-aza-6-phosphonanoic acid,

4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide

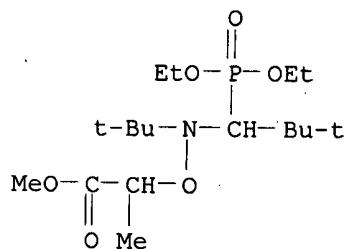
RL: CAT (Catalyst use); USES (Uses)

(initiator; nitroxide-mediated controlled free-
 radical polymn. kinetics of Bu acrylate in
 aq. miniemulsions)

RN 300811-93-2 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-

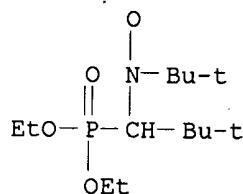
ethoxy-2-methyl-, methyl ester, 6-oxide (9CI) (CA INDEX NAME)



IT 188526-94-5, N-tert-Butyl-N-(1-diethylphosphono-2,2-dimethylpropyl)-N-oxyl

RL: RCT (Reactant); RACT (Reactant or reagent)
(mediator; nitroxide-mediated controlled **free-radical**
polymn. kinetics of Bu **acrylate** in aq. miniemulsions)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)

L32 ANSWER 7 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2002:868644 HCPLUS

DN 138:137668

TI Formation of polyacrylate brushes on silica surfaces

AU Parvole, J.; Billon, L.; Montfort, J. P.

CS Laboratoire de Physico-Chimie des Polymeres, UMR 5067, Pau, 64053, Fr.

SO Polymer International (2002), 51(10), 1111-1116

CODEN: PLYIEI; ISSN: 0959-8103

PB John Wiley & Sons Ltd.

DT Journal

LA English

CC 35-4 (Chemistry of Synthetic High **Polymers**)

AB The formation of **polyacrylate** (molten state polymers; Tg <23.degree.) monolayers attached onto SiO₂ surfaces using covalently bonded **initiators** for radical-chain **polymn.** is reported. In a first reaction step, the **initiator** is self-assembled on the surface. In a subsequent reaction, the **initiator** is activated and the polymer formed *in situ* at the surface of the substrate with high surface grafting d. Also, the use of a living **free-radical** process permits the mol. wt. and polydispersity of the polymer chains to be controlled, and the polymer monolayer thickness also. The polymers have been qual. characterized by x-ray spectroscopy (XPS) and Fourier transformed IR (FTIR) measurements.

ST **polyacrylate** surface grafting silica; **acrylate** living

free radical polymer initiator

IT Polymerization
 (living, radical; polyacrylate brushes grafted on silica surfaces)

IT Polymerization kinetics
 (radical; polyacrylate brushes grafted on silica surfaces)

IT 17170-81-9P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (esterification; polyacrylate brushes grafted on silica surfaces)

IT 493025-01-7P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (hydrosilation; polyacrylate brushes grafted on silica surfaces)

IT 493025-02-8P
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);
 USES (Uses)
 (initiator, coupling agent; polyacrylate brushes grafted on silica surfaces)

IT 78-67-1, AIBN
 RL: CAT (Catalyst use); USES (Uses)
 (polyacrylate brushes grafted on silica surfaces)

IT 2638-94-0 10026-13-8, Phosphorus pentachloride
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (polyacrylate brushes grafted on silica surfaces)

IT 9003-32-1P, Poly(ethyl acrylate) 9003-49-0P, Poly(butyl acrylate)
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (polyacrylate brushes grafted on silica surfaces)

IT 188526-94-5 300811-93-2
 RL: CAT (Catalyst use); USES (Uses)
 (promoter; polyacrylate brushes grafted on silica surfaces)

IT 107-18-6, Allyl alcohol, reactions 998-30-1, Triethoxysilane
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with azo compd.; polyacrylate brushes grafted on silica surfaces)

IT 7631-86-9, Silica, miscellaneous
 RL: MSC (Miscellaneous)
 (substrate, surface grafted; polyacrylate brushes grafted on silica surfaces)

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
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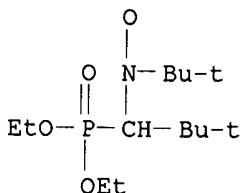
IT 188526-94-5 300811-93-2

RL: CAT (Catalyst use); USES (Uses)

(promoter; polyacrylate brushes grafted on silica surfaces)

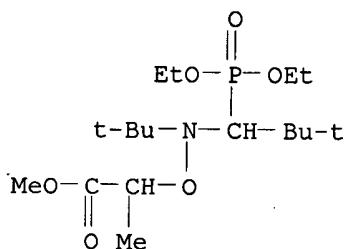
RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



RN 300811-93-2 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (9CI) (CA INDEX NAME)



L32 ANSWER 8 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 2002:865154 HCPLUS
 DN 138:90137
 TI Kinetics and molecular weight evolution during controlled radical polymerization
 AU Chauvin, Florence; Alb, Alina M.; Bertin, Denis; Tordo, Paul; Reed, Wayne F.
 CS Physics Dept., Tulane University, New Orleans, LA, 70118, USA
 SO Macromolecular Chemistry and Physics (2002), 203(14), 2029-2041
 CODEN: MCHPES; ISSN: 1022-1352
 PB Wiley-VCH Verlag GmbH & Co. KGaA
 DT Journal
 LA English
 CC 35-3 (Chemistry of Synthetic High **Polymers**)
 AB Automatic, continuous online monitoring of **polymn.** reactions (ACOMP) was applied to the controlled radical **polymn.** (CRP) of Bu **acrylate** (BA) using N-tert-butyl-1-diethylphosphono-2,-

dimethylpropyl nitroxide (SG1), to det. monomer conversion, evolution of mol. wt., reduced viscosity, and rate consts. The conversion is roughly first order, but depends only on the initial ratio of free SG1 to initiator; i.e., it is zeroth order in initiator concn. While it was found that the wt.-av. mol. Mw, and viscosity-av. mass increase in approx. linear fashion with conversion, their values are finite at zero conversion. Although ACOMP involves no chromatog. sepn. columns, a useful measure of polydispersity evolution was found from combining Mw and viscosity-based masses. CRP is contrasted with monitoring results for conventional **free-radical polymn.** Distinct light-scattering signatures are expected, and found exptl., for the 2 cases. The CRP kinetic findings allowed the detn. of the equil. const. between active and dormant species at 120.degree. ($K_{eq} = 1.53 \cdot 10^{-10} M$), as well as the corresponding kinetic const. of deactivation ($k_{deact} = 2.8 \cdot 10^{+7} L \cdot mol^{-1} \cdot s^{-1}$) and activation ($k_{act} = 4.2 \cdot 10^{-3} s^{-1}$). Cross-checks on the monitoring results were made with conventional Gel Permeation Chromatog. (GPC), and kinetic behavior was also analyzed in the light of numerical integration software.

ST radical **polymn** kinetics **polymn** butyl **acrylate**
mol wt; **polybutyl acrylate** mol wt radical **polymn**

IT Molecular weight
(continuous online monitoring of kinetics and mol. wt. evolution during controlled radical **polymn**.)

IT Polymerization kinetics
(radical; continuous online monitoring of kinetics and mol. wt. evolution during controlled radical **polymn.** of Bu **acrylate**)

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide
RL: CAT (Catalyst use); USES (Uses)
(continuous online monitoring of kinetics and mol. wt. evolution during controlled radical **polymn.** of Bu **acrylate**)

IT 141-32-2, Butyl **acrylate** 9003-49-0, Poly(butyl **acrylate**)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(continuous online monitoring of kinetics and mol. wt. evolution during controlled radical **polymn.** of Bu **acrylate**)

RE.CNT 57 THERE ARE 57 CITED REFERENCES AVAILABLE FOR THIS RECORD

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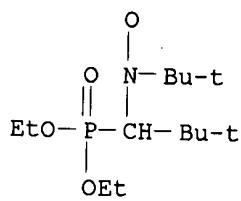
IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide

RL: **CAT (Catalyst use); USES (Uses)**

(continuous online monitoring of kinetics and mol. wt. evolution during controlled radical polymer. of Bu acrylate)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 9 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 2002:778007 HCPLUS
 DN 137:295361
 TI Polymerization in aqueous suspension of vinyl chloride
 IN Bonardi, Christian; Couturier, Jean-Luc; Grimaldi, Sandra; Guerret,
 Olivier; Kervennal, Jacques; Hebrard, Pierre; Taha, Bouchra
 PA Atofina, Fr.
 SO PCT Int. Appl., 23 pp.
 CODEN: PIXXD2
 DT Patent
 LA French
 IC ICM C08F014-06
 ICS C08F002-18; C08F002-38
 CC 35-3 (Chemistry of Synthetic High Polymers)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002079279	A1	20021010	WO 2002-FR1094	20020328
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	FR 2822832	A1	20021004	FR 2001-4425	20010402
PRAI	FR 2001-4425	A	20010402		
OS	MARPAT 137:295361				
AB	The invention concerns a method for polymn. in aq. suspension of vinyl chloride alone or mixed with another vinyl monomer, wherein the initiator comprises .gtoreq.1 compd. selected among dialkyl peroxydicarbonates, peroxy-tert-alkanoates and diacyl peroxides, and it consists in using, as terminator of polymn., a stable nitroxyl radical. The resulting resins have good whiteness.				
ST	vinyl chloride radical polymn nitroxyl terminator; peroxy initiator vinyl chloride polymn nitroxyl terminator				
IT	Polymerization catalysts Polymerization inhibitors (radical polymn. in aq. suspension of vinyl chloride in presence of peroxide initiators and nitroxyl radicals as terminators)				
IT	Nitroxides Peroxides, uses RL: CAT (Catalyst use); USES (Uses) (radical polymn. in aq. suspension of vinyl chloride in presence of				

peroxide initiators and nitroxyl radicals as terminators)

IT 927-07-1, tert-Butyl peroxy pivalate
 RL: CAT (Catalyst use); USES (Uses)
 (Luperox 11M75; radical polymn. in aq. suspension of vinyl chloride in presence of peroxide initiators and nitroxyl radicals as terminators)

IT 16111-62-9, Di-2-ethylhexyl peroxydcarbonate
 RL: CAT (Catalyst use); USES (Uses)
 (Luperox 223EN40; radical polymn. in aq. suspension of vinyl chloride in presence of peroxide initiators and nitroxyl radicals as terminators)

IT 105-74-8, Dilauroyl peroxide 2226-96-2, 4-Hydroxy-TEMPO 26748-41-4,
 Luperox 10M75 95718-78-8, 1,1-Dimethyl-3-hydroxybutyl peroxyneodecanoate
188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide
 RL: CAT (Catalyst use); USES (Uses)
 (radical polymn. in aq. suspension of vinyl chloride in presence of peroxide initiators and nitroxyl radicals as terminators)

IT 9002-86-2P, PVC
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (radical polymn. in aq. suspension of vinyl chloride in presence of peroxide initiators and nitroxyl radicals as terminators)

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD

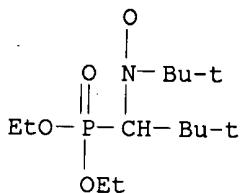
RE

(1) Wa; WO 0238632 A 2002 HCAPLUS

IT **188526-94-5**, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide
 RL: CAT (Catalyst use); USES (Uses)
 (radical polymn. in aq. suspension of vinyl chloride in presence of peroxide initiators and nitroxyl radicals as terminators)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 10 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2002:717702 HCAPLUS
 DN 138:24988
 TI Decomposition of model alkoxyamines in simple and polymerizing systems.
 II. Diastereomeric N-(2-methylpropyl)-N-(1-diethyl-phosphono-2,2-dimethyl-propyl)-aminoxyxl-based compounds
 AU Ananchenko, Gennady S.; Souaille, Marc; Fischer, Hanns; Le Mercier, Christophe; Tordo, Paul
 CS Physikalisch-Chemisches Institut, Universitat Zurich, Zurich, CH 8057, Switz.
 SO Journal of Polymer Science, Part A: Polymer Chemistry (2002), 40(19), 3264-3283
 CODEN: JPACEC; ISSN: 0887-624X
 PB John Wiley & Sons, Inc.

DT Journal
 LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 AB Thermal reactions of the alkoxyamine diastereomers DEPN-R' [DEPN: N-(2-methylpropyl)-N-(1-diethylphosphono-2,2-dimethyl-propyl)-aminoxyl; R': methoxy-carbonylethyl and phenylethyl] with (R,R) + (S,S) and (R,S) + (S,R) configurations have been investigated by 1H NMR at 100. degree.. During the overall decay the diastereomers interconvert, and an anal. treatment of the combined processes is presented. Rate consts. are obtained for the cleavage and reformation of DEPN-R' from NMR, ESR, and chem. induced dynamic nuclear polarization expts. also using 2,2,6,6-tetramethylpiperidinyl-1-oxyl (TEMPO) as a radical scavenger. The rate consts. depend on the diastereomer configuration and the residues R'. Simulations of the kinetics obsd. with styrene and Me **methacrylate** contg. solns. yielded rate consts. for unimeric and **polymeric** alkoxyamines DEPN-(M)n-R'. The results were compatible with the known DEPN mediation of living styrene and **acrylate** polymers. For Me **methacrylate** the equil. const. of the reversible cleavage of the dormant chains DEPN-(M)n-R' is very large and renders successful living polymers unlikely. Mechanistic and kinetic differences of DEPN- and TEMPO-mediated polymers. are discussed.
 ST alkoxyamine diastereomer decompn living radical polymer initiator kinetics NMR
 IT Decomposition
 Decomposition kinetics
 Diastereomers
 Equilibrium constant
 (decompn. of diastereomeric N-(2-methylpropyl)-N-(1-di-Et-phosphono-2,2-di-Me-propyl)-aminoxyl-based compds. in simple and polymg. systems)
 IT Polymerization catalysts
 Polymerization kinetics
 (living, radical; decompn. of diastereomeric N-(2-methylpropyl)-N-(1-di-Et-phosphono-2,2-di-Me-propyl)-aminoxyl-based compds. in simple and polymg. systems)
 IT 478185-81-8 478185-82-9 478185-83-0
 478185-84-1 478185-85-2 478185-86-3
 478185-87-4 478185-88-5
 RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
 (decompn. of diastereomeric N-(2-methylpropyl)-N-(1-di-Et-phosphono-2,2-di-Me-propyl)-aminoxyl-based compds. in simple and polymg. systems)
 IT 80-62-6, Methyl **methacrylate** 100-42-5, Styrene, reactions
 141-32-2, Butyl **acrylate**
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (decompn. of diastereomeric N-(2-methylpropyl)-N-(1-di-Et-phosphono-2,2-di-Me-propyl)-aminoxyl-based compds. in simple and polymg. systems)
 RE.CNT 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD
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IT 478185-81-8 478185-82-9 478185-83-0

478185-84-1 478185-85-2 478185-86-3

478185-87-4 478185-88-5

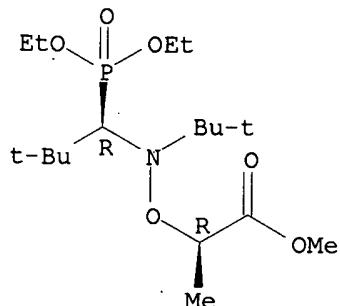
RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)

(decompn. of diastereomeric N-(2-methylpropyl)-N-(1-di-Et-phosphono-2,2-di-Me-propyl)-aminoxy-based compds. in simple and polymg. systems)

RN 478185-81-8 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2R,5R)- (9CI) (CA INDEX NAME)

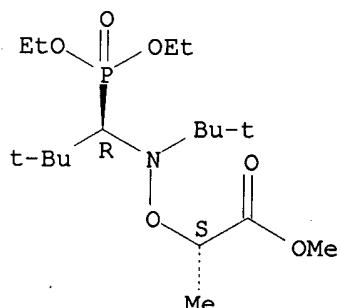
Absolute stereochemistry.



RN 478185-82-9 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2S,5R)- (9CI) (CA INDEX NAME)

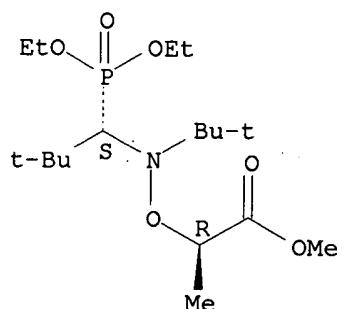
Absolute stereochemistry.



RN 478185-83-0 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2R,5S)- (9CI) (CA INDEX NAME)

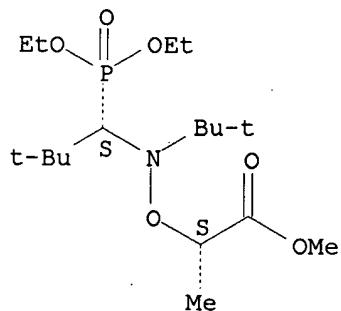
Absolute stereochemistry.



RN 478185-84-1 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2S,5S)- (9CI) (CA INDEX NAME)

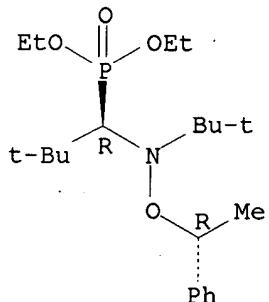
Absolute stereochemistry.



RN 478185-85-2 HCPLUS

CN Phosphonic acid, [(1R)-1-[(1,1-dimethylethyl)[(1R)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)

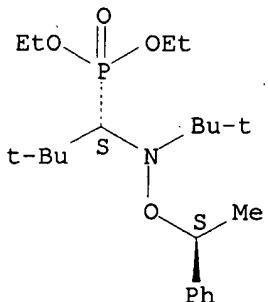
Absolute stereochemistry.



RN 478185-86-3 HCPLUS

CN Phosphonic acid, [(1S)-1-[(1,1-dimethylethyl)[(1S)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)

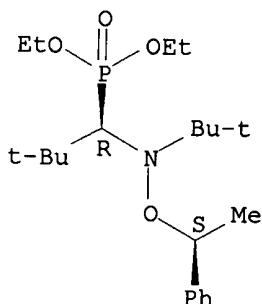
Absolute stereochemistry.



RN 478185-87-4 HCAPLUS

CN Phosphonic acid, [(1R)-1-[(1,1-dimethylethyl)[(1S)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)

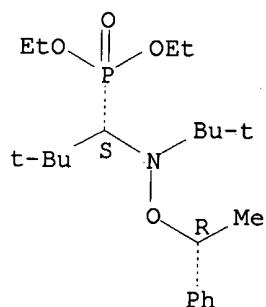
Absolute stereochemistry.



RN 478185-88-5 HCAPLUS

CN Phosphonic acid, [(1S)-1-[(1,1-dimethylethyl)[(1R)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.



L32 ANSWER 11 OF 59 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:709890 HCAPLUS

DN 137:353388

TI Controlled/Living Radical **Polymerization** of tert-Butyl Acrylate Mediated by Chiral Nitroxides: A Stereochemical Study

AU Ananchenko, Gennady; Matyjaszewski, Krzysztof

CS Department of Chemistry, Carnegie Mellon University, Pittsburgh, PA, 15213, USA

SO Macromolecules (2002), 35(22), 8323-8329

CODEN: MAMOBX; ISSN: 0024-9297

PB American Chemical Society

DT Journal

LA English

CC 35-3 (Chemistry of Synthetic High **Polymers**)

AB The two diastereomeric alkoxyamines of tBP-DEPN, where tBP is 1-(tert-butoxycarbonyl)ethyl and DEPN is N-(2-methylpropyl)-N-(1-diethylphosphophono-2,2-dimethylpropyl)aminoyl, have marked differences in their thermodyn. stability (ratio of diastereomers is 5:1 at 100.degree. in o-dichlorobenzene). They were used as initiators for the

controlled/living radical **polymn.** of tert-Bu **acrylate** to test the premise that such moderators could potentially affect the tacticity of the resulting poly(tert-Bu **acrylate**). 2D NMR was used to analyze the end group configuration for the samples with shorter chain lengths (DP = 15-20). Although the diastereomeric excess in the polymer alkoxyamine end group is even higher than for the model compd. (ratio of diastereomers is 7:1), the distribution of terminal triads in poly(tert-Bu **acrylate**) does not differ from those in the entire chain and is identical to that of the polymers prepd. by ATRP (atom transfer radical **polymn.**). Thus, the tacticities of the poly(tert-Bu **acrylate**)s prepd. by DEPN-mediated **polymn** ., ATRP, and conventional **free radical polymn** . were the same.

ST butyl **acrylate** controlled living radical **polymn** nitroxide initiator stereochem; tacticity butyl **acrylate** controlled living radical **polymn** nitroxide initiator

IT **Polymerization**

Polymerization catalysts

(living, radical; prepn. of chiral nitroxide **initiators** and stereochem. study on controlled/living radical **polymn.** of tert-Bu **acrylate** mediated by chiral nitroxides)

IT **Tacticity**

(prepn. of chiral nitroxide **initiators** and stereochem. study on controlled/living radical **polymn.** of tert-Bu **acrylate** mediated by chiral nitroxides)

IT **Decomposition kinetics**

(thermal stability of chiral nitroxide **initiators** and stereochem. study on controlled/living radical **polymn.** of tert-Bu **acrylate** mediated by chiral nitroxides)

IT 80037-90-7, 1,1,3,3-Tetramethylisoindolin-N-oxyl

RL: CAT (Catalyst use); USES (Uses)
(**initiator**; prepn. of chiral nitroxide **initiators** and stereochem. study on controlled/living radical **polymn.** of tert-Bu **acrylate** mediated by chiral nitroxides)

IT 474832-43-4P 474832-44-5P

RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(**initiator**; prepn. of chiral nitroxide **initiators** and stereochem. study on controlled/living radical **polymn.** of tert-Bu **acrylate** mediated by chiral nitroxides)

IT 25232-27-3P, Poly(tert-butyl **acrylate**)

RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. of chiral nitroxide **initiators** and stereochem. study on controlled/living radical **polymn.** of tert-Bu **acrylate** mediated by chiral nitroxides)

IT 868-73-5 39149-80-9, tert-Butyl 2-bromopropionate 188526-94-5

RL: RCT (Reactant); RACT (Reactant or reagent)
(starting material; prepn. of chiral nitroxide **initiators** and stereochem. study on controlled/living radical **polymn.** of tert-Bu **acrylate** mediated by chiral nitroxides)

RE.CNT 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD

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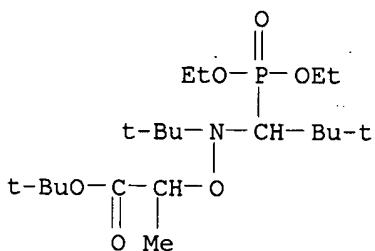
IT 474832-43-4P 474832-44-5P

RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

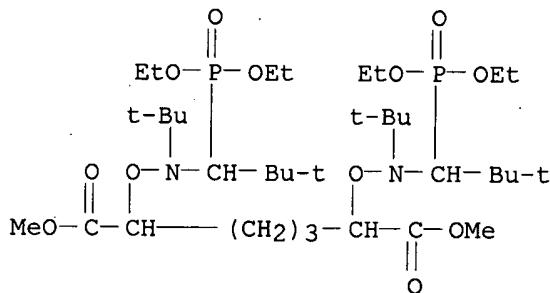
(initiator; prepn. of chiral nitroxide initiators
 and stereochem. study on controlled/living radical polymn. of
 tert-Bu acrylate mediated by chiral nitroxides)

RN 474832-43-4 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, 1,1-dimethylethyl ester, 6-oxide (9CI) (CA INDEX NAME)

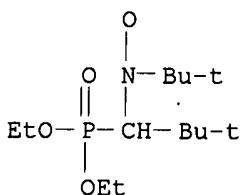


RN 474832-44-5 HCAPLUS
 CN Heptanedioic acid, 2,6-bis[[[1-(diethoxyphosphinyl)-2,2-dimethylpropyl](1,1-dimethylethyl)amino]oxy]-, dimethyl ester (9CI) (CA INDEX NAME)



IT 188526-94-5
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (starting material; prepn. of chiral nitroxide initiators and
 stereochem. study on controlled/living radical polymn. of
 tert-Bu acrylate mediated by chiral nitroxides)

RN 188526-94-5 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 12 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2002:647922 HCAPLUS
 DN 138:171878
 TI Acrylic coatings produced with controlled radical
 polymerization techniques
 AU Callais, Peter; Moskal, Michael; Pichai, Puvrin; Guerret, Olivier;
 Charleux, Bernadette
 CS ATOFINA Chemicals Organic Peroxides R&D, King of Prussia, PA, 19406, USA

SO Proceedings of the International Waterborne, High-Solids, and Powder Coatings Symposium (2002), 29th, 197-210
CODEN: PIWCF4

PB University of Southern Mississippi, Dep. of Polymer Science
DT Journal
LA English
CC 42-7 (Coatings, Inks, and Related Products)
Section cross-reference(s): 35

AB Free radical polymers. account for more than 50% of the world's polymer prodn. It is difficult to control these polymers. and synthesize tailored mols. with specific architecture and properties. Several techniques have been researched to develop ways to control free radical polymers. and terms like controlled radical polymers. (CRP) or "living" free radical polymers. have been used to describe the process. The key aspect in CRP is its ability to eliminate the termination of growing free radical chains. This facilitates the synthesis of polymers with low polydispersity, as well as co- and multi-block copolymers. This technol. also allows well-defined polymer modification and grafting. We have developed a family of nitroxide derivs. that can be applied to a wide range of free radical polymers. to perform controlled radical polymer synthesis. This paper will examine the use of two nitroxide compds., namely SG-1 and MONAMS, to synthesize acrylic high solids coating resins with low polydispersity. We will also discuss the prodn. of block copolymers using these nitroxide in a mini-emulsion process. The chem., synthesis techniques, and properties of these coating resins will be discussed.

ST waterborne coating nitroxide mol wt distribution
acrylate block copolymer; nitroxide control radical polymer
acrylic coating

IT Molecular weight distribution
Viscosity
(acrylic coatings produced with controlled radical polymer.)

IT Polymers, properties
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(block; acrylic coatings produced with controlled radical polymer.)

IT Polymerization
(emulsion; acrylic coatings produced with controlled radical polymer.)

IT Polymerization catalysts
(living, radical; acrylic coatings produced with controlled radical polymer.)

IT Coating materials
(water-thinned; acrylic coatings produced with controlled radical polymer.)

IT 9003-53-6P, Polystyrene 110772-34-4P, Butylacrylate-styrene block copolymer
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(acrylic coatings produced with controlled radical polymer.)

IT 355118-27-3P, Butylacrylate-butyl methacrylate block copolymer
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(diblock; acrylic coatings produced with controlled radical polymer.)

IT 9003-49-0P, Butylacrylate homopolymer

RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (latex; **acrylic coatings** produced with controlled radical **polymn.**)

IT 870-98-4, tert.-Amyl peroctoate 188526-94-5 300811-93-2

RL: CAT (Catalyst use); USES (Uses)
 (polymn. catalyst; **acrylic coatings** produced with controlled radical **polymn.**)

IT 544-76-3, Hexadecane

RL: NUU (Other use, unclassified); USES (Uses)
 (surfactant; **acrylic coatings** produced with controlled radical **polymn.**)

RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

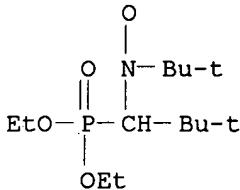
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IT 188526-94-5 300811-93-2

RL: CAT (Catalyst use); USES (Uses)
 (polymn. catalyst; **acrylic coatings** produced with controlled radical **polymn.**)

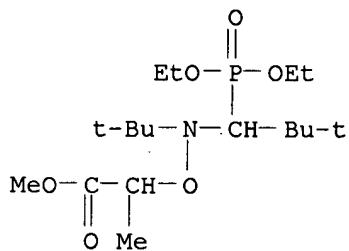
RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



RN 300811-93-2 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphananoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (9CI) (CA INDEX NAME)



L32 ANSWER 13 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 2002:626641 HCPLUS
 DN 137:338197
 TI Effect of chain transfer to polymer in nitroxide-mediated controlled free-radical polymerization of n-butyl acrylate
 AU Farcet, Celine; Bellene, Joel; Charleux, Bernadette
 CS Lab. Chimie Macromoleculaire, UMR 7610, Univ. Pierre et Marie Curie, Paris, 75252, Fr.
 SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(2), 299-300
 CODEN: ACPPAY; ISSN: 0032-3934
 PB American Chemical Society, Division of Polymer Chemistry
 DT Journal; (computer optical disk)
 LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 AB Poly(Bu acrylate) with well defined architectures could be prepd. in miniemulsion and in bulk when the radical polymn. was mediated by N-tert-butyl-N-[1-(di-Et phosphono)-2,2-dimethylpropyl]nitroxide.
 ST nitroxide mediated polymn butyl acrylate
 IT Polymerization
 (bulk, radical; nitroxide-mediated controlled radical polymn. of Bu acrylate)
 IT Chain transfer
 (in nitroxide-mediated controlled radical polymn. of Bu acrylate)
 IT Polymerization
 (microemulsion; nitroxide-mediated controlled radical polymn. of Bu acrylate)
 IT Polymerization catalysts
 (radical; nitroxide-mediated controlled radical polymn. of Bu acrylate)
 IT 9003-49-0P, Poly(butyl acrylate)
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (from nitroxide-mediated controlled radical polymn. of Bu acrylate)
 IT 96-33-3D, Methyl acrylate, reaction products with N-tert-Butyl-N-[1-(di-Et phosphono)-2,2-dimethylpropyl]nitroxide 188526-94-5 188526-94-5D, reaction products with Me acrylate
 RL: CAT (Catalyst use); USES (Uses)

(nitroxide-mediated controlled radical polymn. of Bu
acrylate)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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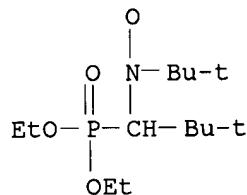
IT 188526-94-5 188526-94-5D, reaction products with Me
acrylate

RL: CAT (Catalyst use); USES (Uses)

(nitroxide-mediated controlled radical polymn. of Bu
acrylate)

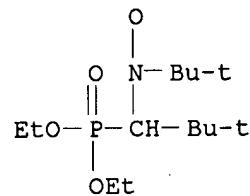
RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)



RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)



L32 ANSWER 14 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2002:626627 HCPLUS

DN 137:338267

TI Comparative study of a series of nitroxides and alkoxyamines in
controlled/"living" radical polymerization

AU Lutz, Jean-Francois; Lacroix-Desmazes, Patrick; Boutevin, Bernard; Le
Mercier, Christophe; Gigmes, Didier; Bertin, Denis; Tordo, Paul

CS Lab. Chimie Macromoleculaire, UMR-CNRS 5076, Ecole Nationale Superieure
Chimie Montpellier, Montpellier, 34296, Fr.

SO Polymer Preprints (American Chemical Society, Division of Polymer

Chemistry) (2002), 43(2), 287-288
 CODEN: ACPPAY; ISSN: 0032-3934

PB American Chemical Society, Division of Polymer Chemistry
 DT Journal; (computer optical disk)
 LA English
 CC 35-4 (Chemistry of Synthetic High Polymers)
 AB Living polymn. of styrene was studied with a series of nitroxides and alkoxyamines as the catalysts. Polymn. of Bu acrylate or vinyl acetate was also studied. It was found that an alkoxyamine based on SGI-OH nitroxide permitted controlled polymn. of styrene and Bu acrylate at 110.degree. in 3 h. Moreover an alkoxyamine based on DMPN nitroxide, which possesses Me substituents on the phosphorous atom, allows fast and efficient controlled polymn. of styrene at 95.degree., and Bu acrylate at 90.degree.. Among the nitroxides reported for NMP, DMPN is presently the most active. However, this structure has a pronounced tendency towards self-decompr.
 ST nitroxide alkoxyamine mediated living polymn styrene comparison catalyst
 IT Polymerization (living, radical; comparative study of a series of nitroxides and alkoxyamines in controlled/"living" radical polymn.)
 IT Molecular weight (of polymers prep'd. with a series of nitroxides and alkoxyamines in controlled/"living" radical polymn.)
 IT Polymerization kinetics (radical; comparative study of a series of nitroxides and alkoxyamines in controlled/"living" radical polymn.)
 IT Bond cleavage (rate const.; comparative study of a series of nitroxides and alkoxyamines in controlled/"living" radical polymn.)
 IT 224575-62-6 227000-59-1 283600-83-9
 283600-84-0 283600-88-4 462104-39-8
 462104-40-1
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst; comparative study of a series of nitroxides and alkoxyamines in controlled/"living" radical polymn.)
 IT 9003-20-7P, Vinyl acetate homopolymer 9003-49-0P, Butyl acrylate homopolymer 9003-53-6P, Styrene homopolymer
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (comparative study of a series of nitroxides and alkoxyamines in controlled/"living" radical polymn.)
 IT 100-42-5, Styrene, reactions 108-05-4, Vinyl acetate, reactions 141-32-2, Butyl acrylate
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (polymn. rate using a series of nitroxides and alkoxyamines in controlled/"living" radical polymn.)

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE

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IT 224575-62-6 283600-83-9 283600-84-0

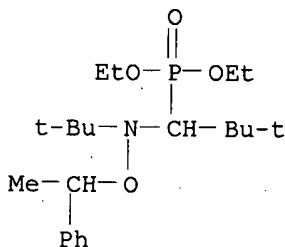
283600-88-4 462104-39-8 462104-40-1

RL: CAT (Catalyst use); USES (Uses)

(catalyst; comparative study of a series of nitroxides and alkoxyamines
in controlled/"living" radical polymn.)

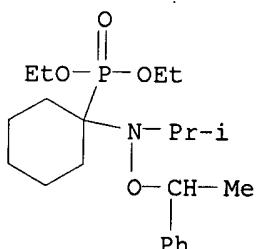
RN 224575-62-6 HCPLUS

CN Phosphonic acid, [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



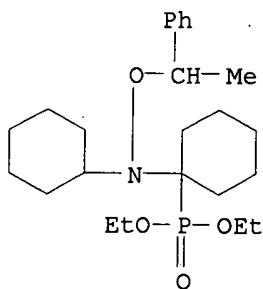
RN 283600-83-9 HCPLUS

CN Phosphonic acid, [1-[(1-methylethyl)(1-phenylethoxy)amino]cyclohexyl]-, diethyl ester (9CI) (CA INDEX NAME)



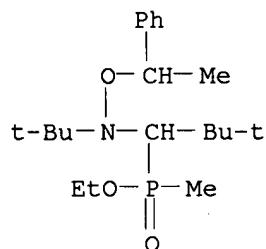
RN 283600-84-0 HCPLUS

CN Phosphonic acid, [1-[(cyclohexyl(1-phenylethoxy)amino)cyclohexyl]-, diethyl ester (9CI) (CA INDEX NAME)



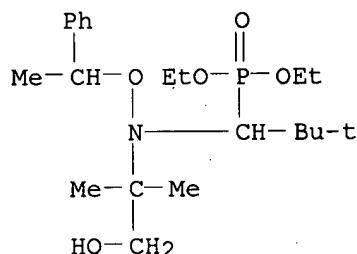
RN 283600-88-4 HCPLUS

CN Phosphinic acid, [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]methyl-, ethyl ester (9CI) (CA INDEX NAME)



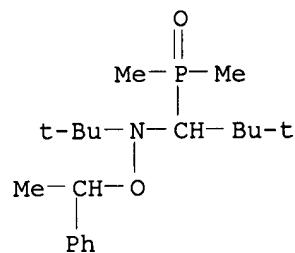
RN 462104-39-8 HCPLUS

CN Phosphonic acid, [1-[(2-hydroxy-1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



RN 462104-40-1 HCPLUS

CN 1-Propanamine, N-(1,1-dimethylethyl)-1-(dimethylphosphinyl)-2,2-dimethyl-N-(1-phenylethoxy)- (9CI) (CA INDEX NAME)



L32 ANSWER 15 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2002:626624 HCPLUS

DN 137:338266

TI Synthesis of fluorinated block copolymers by nitroxide-mediated radical polymerization for supercritical carbon dioxide applications

AU Lacroix-Desmazes, Patrick; Boutevin, Bernard; Taylor, Darlene K.; DeSimone, Joseph M.

CS Lab. Chimie Macromoleculaire, UMR-CNRS 5076, Ecole Nationale Supérieure Chimie Montpellier, Montpellier, 34296, Fr.

SO Polymer Preprints (American Chemical Society, Division of Polymer

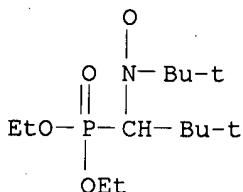
Chemistry) (2002), 43(2), 285-286
 CODEN: ACPPAY; ISSN: 0032-3934

PB American Chemical Society, Division of Polymer Chemistry
 DT Journal; (computer optical disk)
 LA English
 CC 35-4 (Chemistry of Synthetic High Polymers)
 AB Well-defined side-chain liq.-cryst. fluorinated block copolymers poly(styrene)-b-poly(perfluoroctyl-ethylenoxymethylstyrene) (PS-b-PFDS) and poly(styrene)-b-poly(1,1,2,2-tetrahydroperfluorodecyl acrylate) (PS-b-PFDA) were successfully synthesized by nitroxide-mediated radical polymn. The living nature of the polymn. was confirmed by size exclusion chromatog. and proton NMR analyses in .alpha.,.alpha.,.alpha.-trifluorotoluene. The fluorinated CO₂-philic block, if large enough, imparts solv. to the diblock copolymers in liq. and supercrit. carbon dioxide, making them useful as macromol. surfactants in this environmentally benign medium.
 ST styrene block copolymer prepn nitroxide radical polymn; perfluoroctylethylenoxymethylstyrene block copolymer prepn nitroxide radical polymn
 IT Cloud point
 (prepn. of fluorinated block copolymers by nitroxide-mediated radical polymn. for supercrit. carbon dioxide applications)
 IT Fluoropolymers, preparation
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (prepn. of fluorinated block copolymers by nitroxide-mediated radical polymn. for supercrit. carbon dioxide applications)
 IT Polymerization catalysts
 (radical; prepn. of fluorinated block copolymers by nitroxide-mediated radical polymn. for supercrit. carbon dioxide applications)
 IT 125953-40-4P, 1,1,2,2-Tetrahydroperfluorodecyl acrylate-styrene block copolymer 474067-53-3P, Perfluoroctyl-ethylenoxymethylstyrene-styrene block copolymer
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (diblock; prepn. of fluorinated block copolymers by nitroxide-mediated radical polymn. for supercrit. carbon dioxide applications)
 IT 9003-53-6P, Polystyrene
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (precursors; prepn. of fluorinated block copolymers by nitroxide-mediated radical polymn. for supercrit. carbon dioxide applications)
 IT 2564-83-2, TEMPO 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide
 RL: CAT (Catalyst use); USES (Uses)
 (prepn. of fluorinated block copolymers by nitroxide-mediated radical polymn. for supercrit. carbon dioxide applications)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
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 IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide
 RL: CAT (Catalyst use); USES (Uses)
 (prepn. of fluorinated block copolymers by nitroxide-mediated radical polymn. for supercrit. carbon dioxide applications)
 RN 188526-94-5 HCPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 16 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 2002:626589 HCPLUS
 DN 137:338364
 TI Coupling of .omega.-alkoxyamine polymers with the aid of .alpha.-methylstyrene
 AU Chevalier, C.; Guerret, O.; Gnanou, Y.
 CS Lab. Chimie Polymeres Organiques, UMR 5629, ENSCPB-CNRS Univ. Bordeaux 1, Pessac, 33607, Fr.
 SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(2), 253-254
 CODEN: ACPPAY; ISSN: 0032-3934
 PB American Chemical Society, Division of Polymer Chemistry
 DT Journal; (computer optical disk)
 LA English
 CC 35-8 (Chemistry of Synthetic High **Polymers**)
 AB This contribution presented preliminary results concerning the coupling/dimerization of .omega.-alkoxyamine-polymers in the presence of .alpha.-Me styrene. It was found for .omega.-alkoxyamine-polystyrene that the coupling/dimerization of these chains could reach efficiency values as high as 0.9 when heating them in neat .alpha.-Me styrene, above the ceiling temp. of this .alpha.-substituted monomer.
 ST polystyrene alkoxyamine coupling reaction mechanism
 IT Coupling reaction
 Dimerization

Polymerization catalysts

(coupling of .omega.-alkoxyamine polymers with the aid of
.alpha.-methylstyrene)

IT 98-83-9DP, .alpha.-Methylstyrene, reaction products with polystyrene
9003-53-6DP, Polystyrene, alkoxyamine-terminated, reaction products with
methylstyrene
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(coupling of .omega.-alkoxyamine polymers with the aid of
.alpha.-methylstyrene)

IT 300811-93-2

RL: CAT (Catalyst use); USES (Uses)
(initiator; coupling of .omega.-alkoxyamine polymers with the
aid of .alpha.-methylstyrene)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

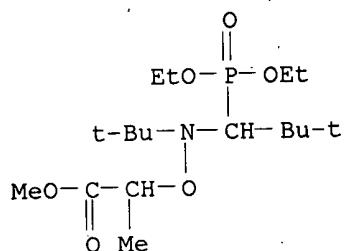
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- (12) Shim, A; ACS Polym Prepr 1999, V40(2), P456 HCPLUS
- (13) Yoshikawa, C; E-Polymers 2002, 013

IT 300811-93-2

RL: CAT (Catalyst use); USES (Uses)
(initiator; coupling of .omega.-alkoxyamine polymers with the
aid of .alpha.-methylstyrene)

RN 300811-93-2 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-
ethoxy-2-methyl-, methyl ester, 6-oxide (9CI) (CA INDEX NAME)

L32 ANSWER 17 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2002:624979 HCPLUS

DN 137:353473

TI Role of nitroxides in the elaboration of new organic materials

AU Chauvin, F.; Gigmes, D.; Marque, S.; Bertin, D.; Tordo, P.; Guerret, O.

CS UMR 6517 case 521, CNRS, Univ. Aix-marseille, Marseille, 13397, Fr.

SO Polymer Preprints (American Chemical Society, Division of Polymer
Chemistry) (2002), 43(2), 108-109

CODEN: ACPPAY; ISSN: 0032-3934

PB American Chemical Society, Division of Polymer Chemistry

DT Journal; (computer optical disk)

LA English

CC 35-8 (Chemistry of Synthetic High Polymers)

AB Nitroxides are one of the most efficient and universal controllers of radical reaction involved in synthesis of org. materials. These stable **free radicals** allow to increase physico-chem. properties of various polymers from commodity polymers to nanotextured materials. One of the advantages is the capacity of using such mols. during the processing of polymers in extruders. Different nitroxides were used as **polymn.** catalysts and polymer degrdn. catalysts.

ST nitroxide controller radical reaction polymn catalyst degrdn

IT Impact strength
Polymerization catalysts
(nitroxides used as universal controllers of radical reaction including polymn. catalysts and polymer degrdn. catalysts)

IT Nitroxides
RL: CAT (Catalyst use); USES (Uses)
(nitroxides used as universal controllers of radical reaction including polymn. catalysts and polymer degrdn. catalysts)

IT Linear low density polyethylenes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(nitroxides used as universal controllers of radical reaction including polymn. catalysts and polymer degrdn. catalysts)

IT Polymer degradation
(oxidative; nitroxides used as universal controllers of radical reaction including polymn. catalysts and polymer degrdn. catalysts)

IT Polyamines
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidized; nitroxides used as universal controllers of radical reaction including polymn. catalysts and polymer degrdn. catalysts)

IT Polymer morphology
(phase; nitroxides used as universal controllers of radical reaction including polymn. catalysts and polymer degrdn. catalysts)

IT 74-85-1D, Ethene, polymers with .alpha.-olefins
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(linear low-d.; nitroxides used as universal controllers of radical reaction including polymn. catalysts and polymer degrdn. catalysts)

IT 2564-83-2, TEMPO 188526-94-5 300811-93-2
RL: CAT (Catalyst use); USES (Uses)
(nitroxides used as universal controllers of radical reaction including polymn. catalysts and polymer degrdn. catalysts)

IT 9002-88-4, HDPE
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(nitroxides used as universal controllers of radical reaction including polymn. catalysts and polymer degrdn. catalysts)

IT 9003-07-0, Polypropylene
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(nitroxides used as universal controllers of radical reaction including polymn. catalysts and polymer degrdn. catalysts)

IT 108501-18-4P, n-Butyl acrylate-methyl methacrylate block copolymer
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(nitroxides used as universal controllers of radical reaction including
polymn. catalysts and polymer degrdn. catalysts)

IT 110-05-4, Di-tert-butyl peroxide

RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidant; nitroxides used as universal controllers of radical reaction
including polymn. catalysts and polymer degrdn. catalysts)

IT 71878-19-8D, Chimassorb 944, oxidized

RL: RCT (Reactant); RACT (Reactant or reagent)
(polynitroxide; nitroxides used as universal controllers of radical
reaction including polymn. catalysts and polymer degrdn. catalysts)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

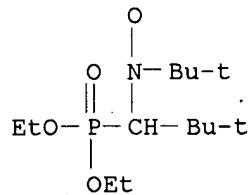
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IT 188526-94-5 300811-93-2

RL: CAT (Catalyst use); USES (Uses)
(nitroxides used as universal controllers of radical reaction including
polymn. catalysts and polymer degrdn. catalysts)

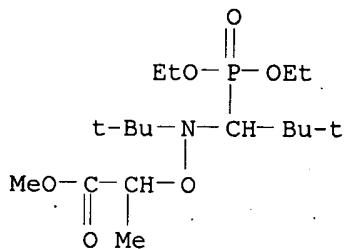
RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)



RN 300811-93-2 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-
ethoxy-2-methyl-, methyl ester, 6-oxide (9CI) (CA INDEX NAME)



L32 ANSWER 18 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 2002:624966 HCPLUS
 DN 137:353359
 TI Use of a difunctional alkoxyamine **initiator** in the miniemulsion
polymerization of n-butyl **acrylate**
 AU Farcet, Celine; Charleux, Bernadette; Pirri, Rosangela; Guerret, Olivier
 CS Lab. Chimie Macromoleculaire, UMR 760, Univ. Pierre et Marie Curie, Paris,
 75252, Fr.
 SO Polymer Preprints (American Chemical Society, Division of Polymer
 Chemistry) (2002), 43(2), 98-99
 CODEN: ACPPAY; ISSN: 0032-3934
 PB American Chemical Society, Division of Polymer Chemistry
 DT Journal; (computer optical disk)
 LA English
 CC 35-3 (Chemistry of Synthetic High **Polymers**)
 AB The application of controlled **free-radical**
polymn. to aq. dispersed systems offers the opportunity to
 directly prep. well-defined copolymers in a latex form. In the presented
 work a SG1-based difunctional alkoxyamine was used as an **initiator**
 for the homopolymn. of Bu **acrylate** in aq. miniemulsion, first to
 increase the achievable molar mass and second, to use the polymer as a
 difunctional macroinitiator for the synthesis of triblock copolymers in
 aq. dispersed systems. Well-defined polymers with one alkoxyamine
 functionality at each end were obtained, providing that monomer conversion
 was kept below 70%. Beyond this conversion, extensive broadening of the
 molar mass distribution was evidenced, as the consequence of termination
 and transfer to polymer. These .alpha.,.omega.-difunctional homopolymers
 were used as precursors for the synthesis of triblock copolymers.
 ST alkoxyamine difunctional catalyst miniemulsion **polymn** butyl
acrylate
 IT **Polymerization catalysts**
 (difunctional alkoxyamine **initiator** in miniemulsion
 polymn. of Bu **acrylate**)
 IT 188526-94-5
 RL: **CAT (Catalyst use)**; **USES (Uses)**
 (cocatalyst; difunctional alkoxyamine **initiator** in
 miniemulsion **polymn.** of Bu **acrylate**)
 IT 300811-94-3
 RL: **CAT (Catalyst use)**; **USES (Uses)**
 (difunctional alkoxyamine **initiator** in miniemulsion
 polymn. of Bu **acrylate**)
 IT 9003-49-0P, Poly(butyl **acrylate**)
 RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
 (difunctional alkoxyamine **initiator** in miniemulsion
 polymn. of Bu **acrylate**)

RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

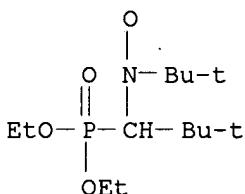
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IT 188526-94-5

RL: CAT (Catalyst use); USES (Uses)
(cocatalyst; difunctional alkoxyamine initiator in
miniemulsion polymn. of Bu acrylate)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)

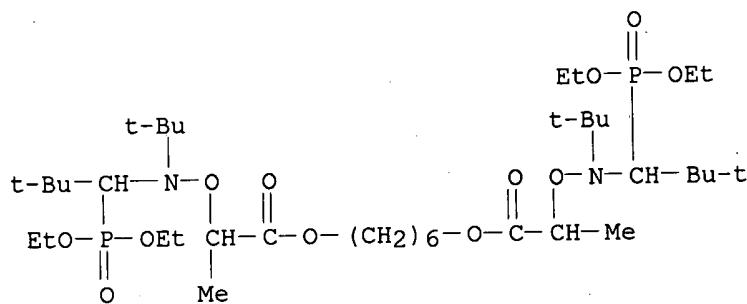


IT 300811-94-3

RL: CAT (Catalyst use); USES (Uses)
(difunctional alkoxyamine initiator in miniemulsion
polymn. of Bu acrylate)

RN 300811-94-3 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-
ethoxy-2-methyl-, 1,6-hexanediyl ester, 6,6'-dioxide (9CI) (CA INDEX
NAME)



L32 ANSWER 19 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2002:597366 HCAPLUS
 DN 138:155056
 TI **Coatings** by controlled radical polymerization
 AU Callais, Peter; Guerret, Olivier
 CS USA
 SO European Coatings Journal (2002), (7-8), 16, 18, 21-22, 24-25
 CODEN: ECJOEF; ISSN: 0930-3847
 PB Vincentz Verlag
 DT Journal
 LA English
 CC 42-7 (**Coatings, Inks, and Related Products**)
 Section cross-reference(s): 35
 AB Several techniques have been researched to develop ways to control free radical polymers. and terms like "Controlled Radical Polymn." (CRP) or "living" free radical polymers. have been used to describe the process. The key aspect in CRP is its ability to eliminate the termination of growing free radical chains. This facilitates the synthesis of polymers with low polydispersities, as well as co- and multi-block copolymers. This technol. also allows well-defined polymer modification and grafting. Now, there is a family of nitroxide derivs. that can be applied to a wide range of free radical polymers. to perform controlled radical polymer synthesis. This paper will examine the use of two nitroxide compds., namely SG-1 and Monams, to synthesize **acrylic** High Solids **Coating** (HSC) resins with low polydispersities.
 ST nitroxide controlled radical **polymn acrylic coating**
 IT Nitroxides
 RL: CAT (Catalyst use); USES (Uses)
 (polymn. catalysts; use of nitroxide compds. in controlled radical polymn. for prepn. of **acrylic coatings**)
 IT **Coating** materials
 Polymerization
 Polymerization catalysts
 (use of nitroxide compds. in controlled radical polymn. for prepn. of **acrylic coatings**)
 IT 188526-94-5D, alkoxyamine derivs.
 RL: CAT (Catalyst use); USES (Uses)
 (Monams; use of nitroxide compds. in controlled radical polymn. for prepn. of **acrylic coatings**)
 IT 188526-94-5, SG 1
 RL: CAT (Catalyst use); USES (Uses)

(SG 1 (initiator); use of nitroxide compds. in controlled radical **polymn.** for prepn. of **acrylic coatings**)

IT 110772-34-4P, Butyl **acrylate**-styrene block copolymer
 136456-42-3P, Butyl **methacrylate**-butyl **acrylate**-styrene block copolymer
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (use of nitroxide compds. in controlled radical **polymn.** for prepn. of **acrylic coatings**)

RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

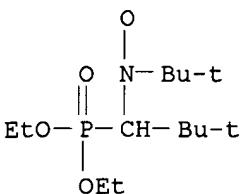
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IT 188526-94-5D, alkoxyamine derivs.

RL: **CAT (Catalyst use)**; USES (Uses)
 (Monams; use of nitroxide compds. in controlled radical **polymn.** for prepn. of **acrylic coatings**)

RN 188526-94-5 HCPLUS

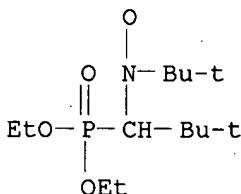
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



IT 188526-94-5, SG 1

RL: CAT (Catalyst use); USES (Uses)
 (SG 1 (initiator); use of nitroxide compds. in controlled
 radical polymn. for prepn. of acrylic
 coatings)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)

L32 ANSWER 20 OF 59 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:540898 HCAPLUS

DN 137:247987

TI Nitroxide-mediated miniemulsion polymerization of n-butyl acrylate: synthesis of controlled homopolymers and gradient copolymers with styrene

AU Farcet, Celine; Charleux, Bernadette; Pirri, Rosangela

CS Laboratoire de Chimie Macromoleculaire Unite Mixte de Recherche associee
 au CNRS (UMR 7610) Universite Pierre et Marie Curie, Paris, 75252, Fr.SO Macromolecular Symposia (2002), 182(3rd IUPAC-Sponsored International Symposium on Free-Radical Polymerization: Kinetics and Mechanism, 2001),
 249-260

CODEN: MSYMEC; ISSN: 1022-1360

PB Wiley-VCH Verlag GmbH

DT Journal

LA English

CC 35-3 (Chemistry of Synthetic High Polymers)

AB Controlled free-radical homopolymn. of Bu acrylate and its copolymn. with styrene have been studied in aq. miniemulsion, using an acyclic .beta.-phosphonylated nitroxide as a mediator, the N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxide, also called SG1. Polymn. kinetics have been studied and characterization of the (co)polymers has been performed, demonstrating the successful synthesis of well-defined poly(Bu acrylate) homopolymers and poly(Bu acrylate-co-styrene) gradient copolymers.

ST nitroxide mediated miniemulsion polymn butyl acrylate; styrene butyl acrylate gradient copolymer prepn

IT Polymerization kinetics
 (emulsion; kinetics of miniemulsion polymn. of Bu acrylate and styrene in presence of nitroxide deriv. and alkoxyamine initiator)IT Polymerization catalysts
 (emulsion; prepn. of controlled Bu acrylate homopolymer and gradient copolymer with styrene by miniemulsion polymn. in presence of nitroxide deriv. and alkoxyamine initiator)

IT 83310-58-1

RL: NUU (Other use, unclassified); USES (Uses)

(Forafac, surfactants; prepn. of controlled Bu **acrylate** homopolymer and gradient copolymer with styrene by miniemulsion **polymn.** in presence of nitroxide deriv. and alkoxyamine **initiator**)

IT 100-42-5, Styrene, reactions 141-32-2, Butyl **acrylate**
 RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (kinetics of miniemulsion **polymn.** of Bu **acrylate** and styrene in presence of nitroxide deriv. and alkoxyamine **initiator**)

IT 188526-94-5
 RL: **CAT (Catalyst use)**; USES (Uses)
 (prepn. of controlled Bu **acrylate** homopolymer and gradient copolymer with styrene by miniemulsion **polymn.** in presence of nitroxide deriv. and alkoxyamine **initiator**)

IT 9003-49-0P, Poly(butyl **acrylate**) 25767-47-9P, Butyl **acrylate**-styrene copolymer
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. of controlled Bu **acrylate** homopolymer and gradient copolymer with styrene by miniemulsion **polymn.** in presence of nitroxide deriv. and alkoxyamine **initiator**)

IT 151-21-3, Sodium dodecyl sulfate, uses 157710-33-3, Dowfax 8390
 RL: NUU (Other use, unclassified); USES (Uses)
 (surfactants; prepn. of controlled Bu **acrylate** homopolymer and gradient copolymer with styrene by miniemulsion **polymn.** in presence of nitroxide deriv. and alkoxyamine **initiator**)

RE.CNT 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD
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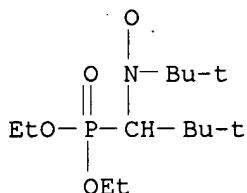
IT 188526-94-5

RL: CAT (Catalyst use); USES (Uses)

(prepn. of controlled Bu **acrylate** homopolymer and gradient copolymer with styrene by miniemulsion **polymn.** in presence of nitroxide deriv. and alkoxyamine **initiator**)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 21 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2002:540897 HCPLUS

DN 137:263340

TI Design and use of .beta.-phosphorus nitroxides and alkoxyamines in controlled/"living" **free radical polymerizations**

AU Le Mercier, Christophe; Acerbis, Sebastien; Bertin, Denis; Chauvin, Florence; Gigmes, Didier; Guerret, Olivier; Lansalot, Muriel; Marque, Sylvain; Le Moigne, Francois; Fischer, Hanns; Tordo, Paul

CS Aix-Marseille 1 and 3 Universities and CNRS, UMR 6517 "Chemistry, Biology and Free Radicals", Marseille, 13397, Fr.

SO Macromolecular Symposia (2002), 182(3rd IUPAC-Sponsored International Symposium on Free-Radical Polymerization: Kinetics and Mechanism, 2001), 225-247

CODEN: MSYMEC; ISSN: 1022-1360

PB Wiley-VCH Verlag GmbH

DT Journal

LA English

CC 35-3 (Chemistry of Synthetic High **Polymers**)AB Persistent nitroxides and their corresponding alkoxyamines are important regulators of living radical **polymn.** Here we describe the synthesis of .beta.-phosphorus nitroxides bearing a .beta.-hydrogen, that

present very interesting properties for the control of the radical polymn. of styrenes, acrylates and other monomers. A large series of alkoxyamines derived from these nitroxides was prep'd., and ESR (ESR) was used to det. both the temp. (Tc) and the rate const. (kd) for their homolysis. For the whole series of alkoxyamines (27 compds.), a very good linear correlation was found between Tc and logkd. Satisfactory linear correlations were found between Tc and calcd. (PM3 method) Bond Dissocn. Energy (BDE) of the NO-C bond, for series of alkoxyamines with the same type of leaving radical. The characteristics of free radical polymn. of styrene carried out in the presence of these new nitroxides and alkoxyamines will be discussed.

ST phosphorus nitroxide alkoxyamine living radical polymn catalyst

IT Polymerization catalysts

(living, radical; .beta.-phosphorus nitroxides and alkoxyamines in controlled/living radical polymn.)

IT 34672-81-6 54051-40-0 54051-41-1 102261-92-7 154554-67-3

157462-14-1 197246-27-8 224575-61-5 224575-62-6

227000-59-1 258354-78-8 283600-81-7 283600-82-8

283600-88-4 288583-07-3 288583-09-5

288583-10-8 300811-93-2 462104-37-6

462104-38-7 462104-39-8 462104-40-1

462104-41-2 462104-42-3 462104-43-4

462104-44-5 462104-45-6

RL: CAT (Catalyst use); PRP (Properties); USES (Uses)

(.beta.-phosphorus nitroxides and alkoxyamines in controlled/living radical polymn.)

IT 188526-94-5P 188707-72-4P 258354-63-1P

258354-64-2P 263355-91-5P 339127-95-6P

462104-32-1P 462104-33-2P 462104-34-3P

462104-35-4P 462104-36-5P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(.beta.-phosphorus nitroxides and alkoxyamines in controlled/living radical polymn.)

IT 9003-53-6P, Polystyrene

RL: SPN (Synthetic preparation); PREP (Preparation)

(.beta.-phosphorus nitroxides and alkoxyamines in controlled/living radical polymn.)

RE.CNT 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS RECORD

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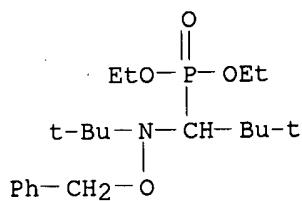
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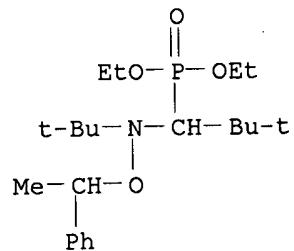
RL: CAT (Catalyst use); PRP (Properties); USES (Uses)
 (.beta.-phosphorus nitroxides and alkoxyamines in controlled/living
 radical polymn.)

RN 224575-61-5 HCPLUS

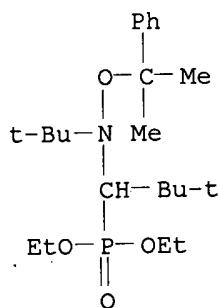
CN Phosphonic acid, [1-[(1,1-dimethylethyl)(phenylmethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



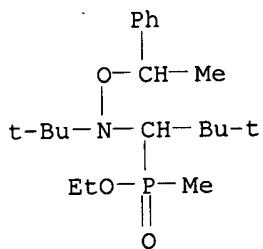
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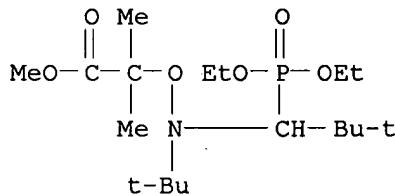
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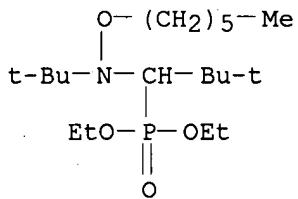
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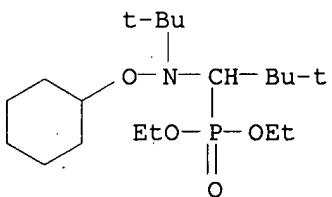
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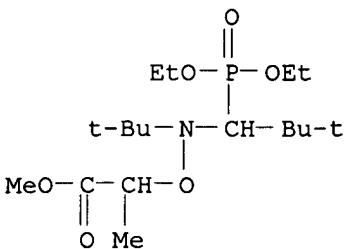
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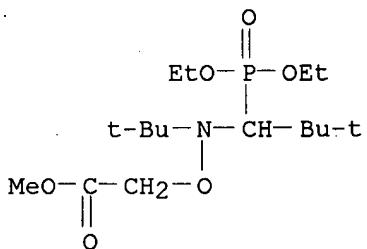
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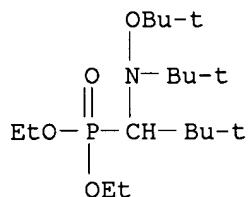
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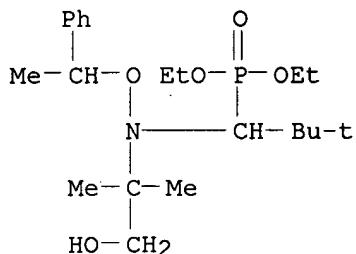
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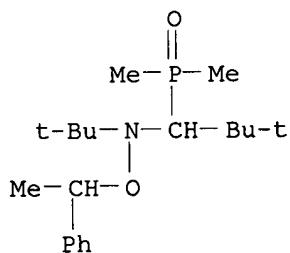
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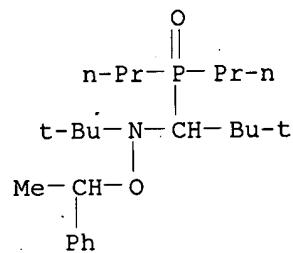
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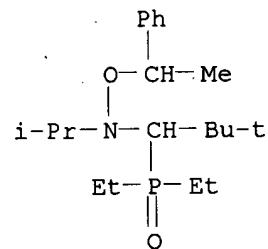
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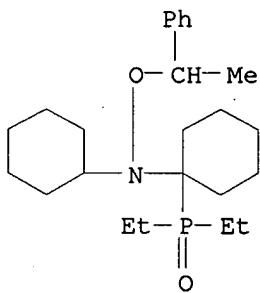
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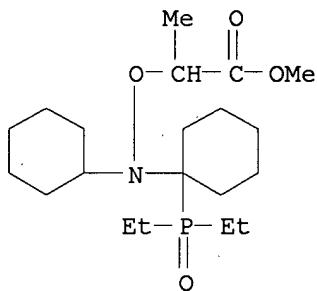
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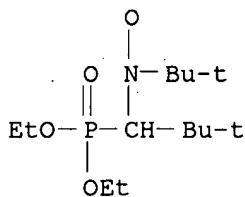
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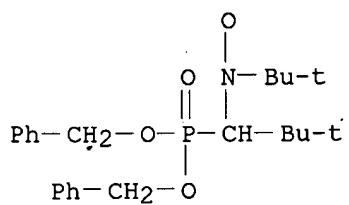
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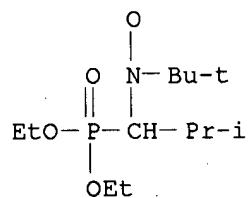
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 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (.beta.-phosphorus nitroxides and alkoxyamines in controlled/living radical polymn.)
 RN 188526-94-5 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



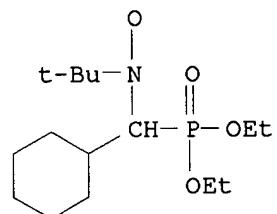
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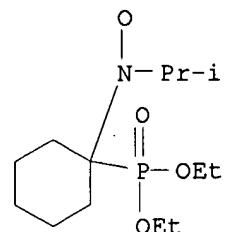
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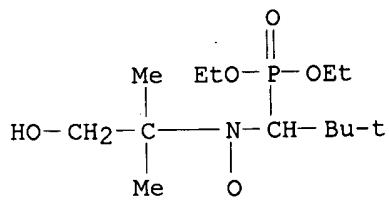
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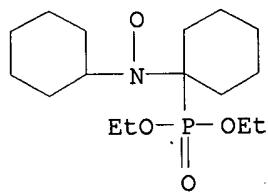
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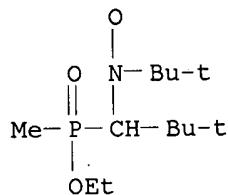
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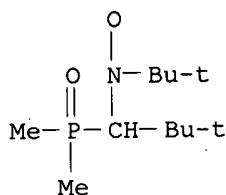
RN 462104-32-1 HCPLUS
 CN Nitroxide, cyclohexyl 1-(diethoxyphosphinyl)cyclohexyl (9CI) (CA INDEX NAME)



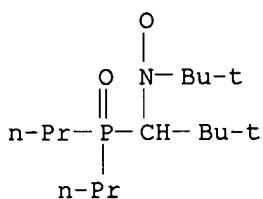
RN 462104-33-2 HCPLUS
 CN Nitroxide, 1,1-dimethylethyl 1-(ethoxymethylphosphinyl)-2,2-dimethylpropyl (9CI) (CA INDEX NAME)



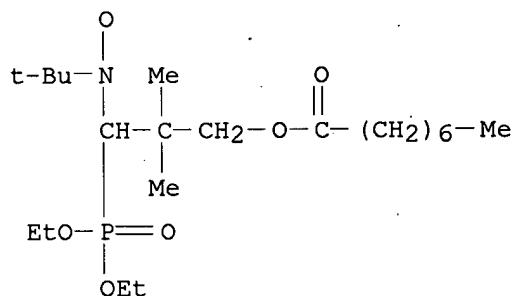
RN 462104-34-3 HCPLUS
 CN Nitroxide, 1,1-dimethylethyl 1-(dimethylphosphinyl)-2,2-dimethylpropyl (9CI) (CA INDEX NAME)



RN 462104-35-4 HCPLUS
 CN Nitroxide, 1,1-dimethylethyl 1-(dipropylphosphinyl)-2,2-dimethylpropyl (9CI) (CA INDEX NAME)



RN 462104-36-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethyl-3-[(1-oxooctyl)oxy]propyl
1,1-dimethylethyl (9CI) (CA INDEX NAME)

L32 ANSWER 22 OF 59 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:388070 HCAPLUS

DN 137:94092

TI Structural Characterization of Nitroxide-Terminated Poly(n-butyl acrylate) Prepared in Bulk and Miniemulsion Polymerizations

AU Farcet, Celine; Bellene, Joeel; Charleux, Bernadette; Pirri, Rosangela
CS Laboratoire de Chimie Macromoleculaire UMR 7610, Universite Pierre et

Marie Curie, Paris, 75252, Fr.

SO Macromolecules (2002), 35(13), 4912-4918
CODEN: MAMOBX; ISSN: 0024-9297

PB American Chemical Society

DT Journal

LA English

CC 35-4 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36

AB The structure of "living" poly(Bu acrylate) homopolymers prep'd. via nitroxide-mediated controlled radical polymer. in bulk and in miniemulsion at 112 .degree.C was examd. by SEC, NMR, and MALDI-TOF mass spectrometry to study the influence of chain transfer to polymer. The absence of detectable terminal unsatn. was confirmed by proton NMR. The branched structure was obsd. by ¹³C NMR. MALDI-TOF MS demonstrated that the majority of chains, even at high conversion, had the ideal structure with one initiator fragment and one nitroxide end group. From these results, we concluded that intramol. chain transfer occurred (presumably by back-biting) and was the predominant mechanism throughout the polymer. at 112 .degree.C.

ST branching butyl acrylate nitroxide mediated controlled radical polymer

IT Chain transfer

(branching of nitroxide-terminated poly(n-Bu acrylate) prep'd. in bulk and miniemulsion polymns.)

IT **Polymer chains**
 (branching; branching of nitroxide-terminated poly(n-Bu acrylate) prep'd. in bulk and miniemulsion polymns.)

IT **Polymerization**
 (emulsion, radical; branching of nitroxide-terminated poly(n-Bu acrylate) prep'd. in bulk and miniemulsion polymns.)

IT **Polymerization**
Polymerization catalysts
 (radical; branching of nitroxide-terminated poly(n-Bu acrylate) prep'd. in bulk and miniemulsion polymns.)

IT **188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide 300811-93-2**
 RL: **CAT (Catalyst use); USES (Uses)**
 (branching of nitroxide-terminated poly(n-Bu acrylate) prep'd. in bulk and miniemulsion polymns.)

IT **9003-49-0P, Poly(butyl acrylate)**
 RL: **PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)**
 (branching of nitroxide-terminated poly(n-Bu acrylate) prep'd. in bulk and miniemulsion polymns.)

RE.CNT 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD

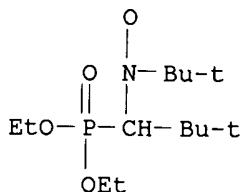
RE

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- (2) Anon; ACS Symp Ser 1998, V685
- (3) Anon; ACS Symp Ser 2000, V768
- (4) Azukizawa, M; Macromol Chem Phys 2000, V201, P774 HCPLUS
- (5) Benoit, D; J Am Chem Soc 1999, V16, P3904
- (6) Benoit, D; Ph D Dissertation, University of Bordeaux I 1997
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- (9) Chieffari, J; Macromolecules 1999, V32, P7700 HCPLUS
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- (11) Farcet, C; Macromol Symp, in press presented at the third IUPAC sponsored international symposium on free-radical polymerization: kinetics and mechanism; SML'01 2001
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- (22) Plessis, C; Macromolecules 2000, V33, P5041 HCPLUS
- (23) Qiu, J; Prog Polym Sci 2001, V26, P2083 HCPLUS
- (24) Robin, S; ACS Symp Ser 2000, V768, P334 HCPLUS
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- (29) van Herk, A; Macromol Rapid Commun 2001, V22, P687 HCPLUS
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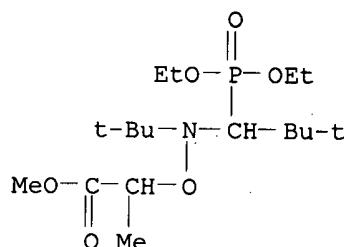
IT **188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide 300811-93-2**

RL: **CAT (Catalyst use); USES (Uses)**
 (branching of nitroxide-terminated poly(n-Bu acrylate) prep'd. in bulk
 and miniemulsion polymns.)

RN 188526-94-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)

RN 300811-93-2 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphanonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-
 ethoxy-2-methyl-, methyl ester, 6-oxide (9CI) (CA INDEX NAME)

L32 ANSWER 23 OF 59 HCAPLUS COPYRIGHT 2003 ACS

AN 2002:368534 HCAPLUS

DN 136:386580

TI Polymerization of vinyl chloride in the presence of a stable nitroxyl
 radical

IN Pfaendner, Rudolf; Wannemacher, Thomas; Braun, Dietrich

PA Ciba Specialty Chemicals Holding Inc., Switz.

SO PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C08F014-06

CC 35-3 (Chemistry of Synthetic High Polymers)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 2002038632	A1	20020516	WO 2001-EP12820	20011106	
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,				

DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2002021813 A5 20020521 AU 2002-21813 20011106

PRAI EP 2000-811066 A 20001113
WO 2001-EP12820 W 20011106

OS MARPAT 136:386580

AB Present invention pertains to a process for controlled **free radical polymn.** or copolyrn. of vinyl chloride at 40-95.degree., at a pressure 5-30 bar in the presence of a stable **free nitroxyl radical.** Thus, 62.5 g vinyl chloride, 234 mg polyvinylalcl., 30 mg citric acid, 0.1 mol% (based on vinyl chloride) Luperox (1,1-dimethyl-2-ethylhexaneperoxoat), and 0.05 mol% (based on vinyl chloride) di-tert-Bu nitroxide were agitated at 70-85.degree. and 12-18 bar for 21 h to give a polymer with 57% yield, Mn 29,000, Mw 64,000, and PD 2.2.

ST vinyl chloride polymer prepn polymn catalyst stable nitroxyl radical

IT Polymerization catalysts
(radical; polymn. of vinyl chloride in presence of stable nitroxyl radical)

IT 686-31-7 2406-25-9, Di-tert-butyl nitroxide 51210-48-1

188526-94-5 244021-05-4 264279-93-8 264280-22-0

405940-70-7

RL: **CAT (Catalyst use); USES (Uses)**

(polymn. of vinyl chloride in presence of stable nitroxyl radical)

IT 9002-86-2P, Vinyl chloride homopolymer 25134-83-2P, Methyl methacrylate-vinyl chloride copolymer 25214-53-3P, Butyl methacrylate-vinyl chloride copolymer 25214-59-9P, Styrene-vinyl chloride copolymer 25231-96-3P, Acrylonitrile-styrene-vinyl chloride copolymer 25702-34-5P, Butyl acrylate-vinyl chloride copolymer 25822-14-4P, Butadiene-vinyl chloride copolymer 34738-89-1P 425637-16-7P

RL: IMF (Industrial manufacture); PREP (Preparation)

(polymn. of vinyl chloride in presence of stable nitroxyl radical)

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Gorki Univ Chem Res; SU 1235872 A 1986 HCPLUS

(2) Pierre, F; WO 9624620 A 1996 HCPLUS

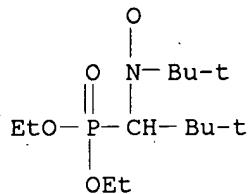
IT 188526-94-5

RL: **CAT (Catalyst use); USES (Uses)**

(polymn. of vinyl chloride in presence of stable nitroxyl radical)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



DN 137:20639
 TI Synthesis and Characterization of Poly(styrene-*b*-n-butyl acrylate-*b*-styrene) Triblock Copolymers Using a Dialkoxyamine as Initiator
 AU Robin, Sophie; Guerret, Olivier; Couturier, Jean-Luc; Pirri, Rosangela; Gnanou, Yves
 CS Laboratoire de Chimie des Polymeres Organiques, ENSCPB-CNRS-Universite Bordeaux 1, Talence, 33402, Fr.
 SO Macromolecules (2002), 35(10), 3844-3848
 CODEN: MAMOBX; ISSN: 0024-9297
 PB American Chemical Society
 DT Journal
 LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 AB This study investigates the ability of a novel difunctional alkoxyamine based on N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide (SG1) to serve as **initiator** for the controlled radical **polymn.** of styrene (S) and Bu **acrylate** (nBuA). The efficiency of this **initiator** was checked using three different methods. After we set up the conditions best suited to the synthesis of perfectly difunctional poly(Bu **acrylate**) (PnBuA) samples, well-defined poly(styrene-*b*-Bu **acrylate**-*b*-styrene) triblock copolymers could be obtained by sequential **polymn.** of the corresponding monomers. However, a loss of control of the targeted structure was obsd. whenever the conversion of styrene exceeded 40%.
 ST styrene acrylate triblock copolymer prepn dialkoxyamine **initiator**
 IT **Polymerization catalysts**
 (prepn. and characterization of Bu **acrylate**-styrene triblock copolymers using dialkoxyamine as **initiator**)
 IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide
 RL: **CAT (Catalyst use); USES (Uses)**
 (**initiators; polymn.** of Bu **acrylate** using dialkoxyamine as **initiator** and)
 IT 300811-94-3
 RL: **CAT (Catalyst use); USES (Uses)**
 (**initiators; prepn.** and characterization of Bu **acrylate**-styrene triblock copolymers using dialkoxyamine as **initiator**)
 IT 9003-49-0P, Poly(butyl **acrylate**) 9003-53-6P, Polystyrene
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (**polymn.** of Bu **acrylate** and styrene in presence of dialkoxyamine as **initiator**)
 IT 110772-34-4P, Butyl acrylate-styrene block copolymer
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (triblock; prepn. and characterization of Bu acrylate-styrene triblock copolymers using dialkoxyamine as **initiator**)
 RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
 (1) Benoit, D; ACS Symp Ser 1998, V685, P225 HCPLUS
 (2) Benoit, D; J Am Chem Soc 1999, V121, P3904 HCPLUS
 (3) Benoit, D; J Am Chem Soc 2000, V122, P5929 HCPLUS
 (4) Benoit, D; Macromolecules 2000, V33, P1505 HCPLUS
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 (6) ControlledLiving Radical Polymerization; ACS Symp Ser 2000, V768, P123
 (7) Fischer, H; J Polym Sci, Part A: Polym Chem 1999, V37, P1885 HCPLUS
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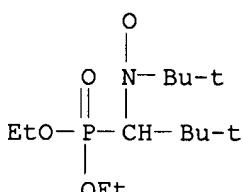
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 (19) Robin, S; ACS Symp Ser 2000, V768, P334 HCPLUS
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 (21) Tong, J; Polymer, in press 1999

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide.

RL: CAT (Catalyst use); USES (Uses)
 (initiators; polymn. of Bu acrylate using
 dialkoxyamine as initiator and)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)

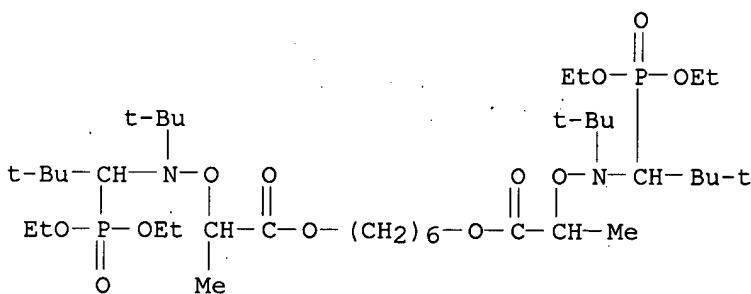


IT 300811-94-3

RL: CAT (Catalyst use); USES (Uses)
 (initiators; prepn. and characterization of Bu acrylate-styrene triblock copolymers using dialkoxyamine as initiator)

RN 300811-94-3 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, 1,6-hexanediyl ester, 6,6'-dioxide (9CI) (CA INDEX NAME)



L32 ANSWER 25 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 2002:151910 HCPLUS
 DN 136:325922

TI Synthesis of Stars and Starlike Block Copolymers from a Trialkoxyamine Used as **Initiator**
 AU Robin, Sophie; Guerret, Olivier; Couturier, Jean-Luc; Gnanou, Yves
 CS Laboratoire de Chimie des Polymères Organiques, ENSCPB-CNRS-Université Bordeaux-I, Toulouse, 33402, Fr.
 SO Macromolecules (2002), 35(7), 2481-2486
 CODEN: MAMOBX; ISSN: 0024-9297
 PB American Chemical Society
 DT Journal
 LA English
 CC 35-4 (Chemistry of Synthetic High **Polymers**)
 AB This study investigates the efficiency of a novel trifunctional alkoxyamine (1) based on N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide (SG1) (2) as **initiator** for the controlled radical **polymer**. of styrene (S) and Bu **acrylate** (nBuA). Three factors, namely the concn. of SG1 initially introduced in excess, the monomer conversion, and-in the specific case of PS samples-the monomer autopolymer., were found to control the quality of the star samples obtained. Well-defined T-(PBuA-b-PS)3 star block copolymers could also be synthesized by sequential copolymer. using the same trifunctional **initiator**.
 ST styrene butyl **acrylate** star block copolymer **polymer** catalyst; trifunctional alkoxyamine nitroxide **polymer** **initiator** controlled radical **polymer**
 IT Polymerization (radical; synthesis of stars and starlike block copolymers from a trialkoxyamine used as **initiator**)
 IT Polymers, preparation RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (star-branched; synthesis of stars and starlike block copolymers from a trialkoxyamine used as **initiator**)
 IT Molecular weight Molecular weight distribution
 Polymerization catalysts (synthesis of stars and starlike block copolymers from a trialkoxyamine used as **initiator**)
 IT 188526-94-5 RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses) (catalyst; in synthesis of stars and starlike block copolymers from a trialkoxyamine used as **initiator**)
 IT 224575-62-6P RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (catalyst; in synthesis of stars and starlike block copolymers from a trialkoxyamine used as **initiator**)
 IT 300811-95-4P RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (catalyst; in synthesis of stars and starlike block copolymers from a trialkoxyamine used as **initiator**)
 IT 563-76-8, 2-Bromopropionyl bromide 585-71-7, 1-Phenylethyl bromide 839-90-7, 1,3,5-Tris(2-hydroxyethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione RL: RCT (Reactant); RACT (Reactant or reagent) (in synthesis of stars and starlike block copolymers from a trialkoxyamine used as **initiator**)
 IT 9003-53-6P, Polystyrene RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP

(Preparation); RACT (Reactant or reagent)
 (star-branched; synthesis of stars and starlike block copolymers from a trialkoxyamine used as initiator)

IT 9003-53-6DP, Polystyrene, initiated by trifunctional catalyst,
 hydrolyzed thereafter 110772-34-4P, Butyl acrylate-styrene block copolymer
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (star-branched; synthesis of stars and starlike block copolymers from a trialkoxyamine used as initiator)

IT 9003-49-0P, Butyl acrylate homopolymer
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (tri-branched, as macroinitiator; synthesis of stars and starlike block copolymers from a trialkoxyamine used as initiator)

RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

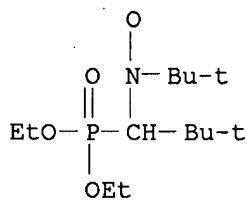
- (1) Baumert, M; Macromol Rapid Commun 1997, V18, P787 HCPLUS
- (2) Baumert, M; Macromol Rapid Commun 2000, V21, P271 HCPLUS
- (3) Benoit, D; ACS Symp Ser 1998, V685, P225 HCPLUS
- (4) Benoit, D; J Am Chem Soc 1999, V121, P3904 HCPLUS
- (5) Benoit, D; J Am Chem Soc 2000, V122, P5929 HCPLUS
- (6) Benoit, D; Macromolecules 2000, V33, P1505 HCPLUS
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- (8) Borhisch, J; Macromol Rapid Commun 1997, V18, P975
- (9) Bouix, M; Macromol Rapid Commun 1998, V19, P209 HCPLUS
- (10) Couturier, J; FR 990445
- (11) Gillet, J; FR 9900127
- (12) Guerret, O; FR 9906329
- (13) Hawker, C; Angew Chem, Int Ed Engl 1995, V34, P1456 HCPLUS
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- (18) Listigovers, N; Macromolecules 1996, V29, P8992 HCPLUS
- (19) Mariani, M; J Polym Sci, Polym Chem 1999, V37, P1237 HCPLUS
- (20) Marque, S; Macromolecules 2000, V33, P4403 HCPLUS
- (21) Matyjaszewski, K; Macromolecules 1998, V31, P5955 HCPLUS
- (22) Miura, Y; Polym Bull (Berlin) 1999, V42, P17 HCPLUS
- (23) Robin, S; ACS Symp Ser 2000, V768, P334 HCPLUS
- (24) Robin, S; Macromol Symp 2001, V165, P43 HCPLUS
- (25) Robin, S; Polym Prepr 2000, V41, P1352.
- (26) Yoshida, E; Macromolecules 1994, V27, P319

IT 188526-94-5

RL: CAT (Catalyst use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
 (catalyst; in synthesis of stars and starlike block copolymers from a trialkoxyamine used as initiator)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)

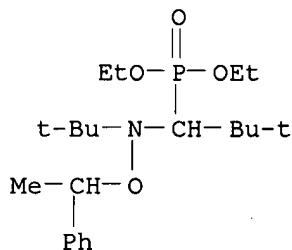


IT 224575-62-6P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (catalyst; in synthesis of stars and starlike block copolymers from a trialkoxyamine used as initiator)

RN 224575-62-6 HCPLUS

CN Phosphonic acid, [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



L32 ANSWER 26 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2002:90635 HCPLUS

DN 136:135169

TI Controlled free radical emulsion and water-based polymerizations and seeded methodologies

IN Klaerner, Gerrit; Safir, Adam; Nielsen, Ralph B.; Jandeleit, Bernd; Huefner, Peter; Li, Yunxiao

PA Symyx Technologies Inc., USA

SO U.S. Pat. Appl. Publ., 64 pp., Cont.-in-part of U.S. Ser. No. 347,606.
CODEN: USXXCO

DT Patent

LA English

IC ICM C08F004-00

NCL 526075000

CC 35-3 (Chemistry of Synthetic High Polymers)

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002013430	A1	20020131	US 2000-520583	20000308
	US 6559255	B2	20030506		
	US 2002001845	A1	20020103	US 2001-911683	20010724
PRAI	US 1999-123498P	P	19990309		
	US 1999-347606	A2	19990702		
	US 1999-347607	A3	19990702		
	US 1999-347608	A3	19990702		
	US 1999-347609	A3	19990702		

US 1999-146936P P 19990731
 US 2000-177879P P 20000124
 US 2000-609461 A3 20000703

AB Nitroxides having an alpha-carbon atom with a destabilizing moiety such as H are effective control agents for emulsion and water-based polymns., including the formation of block copolymers from a wide range of monomers. The nitroxide radicals may be used as a free radical or as an adduct with a residue from the initiator. The emulsions have living characteristics, including the re-initiation of polymer chains. Also, a seeded process for emulsions, which includes the step-wise addn. of monomer is disclosed, providing access to a wide range of initiator types.

ST radical emulsion polymn alpha hydrido nitroxide control agent

IT Nitroxides
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
 (controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT Polymerization catalysts
 (radical; controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 27776-21-2, Vazo 044
 RL: CAT (Catalyst use); USES (Uses)
 (Vazo 044; controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 28445-37-6P 227000-85-3P 293328-11-7P **293328-12-8P**
 293328-13-9P 293328-14-0P 293328-15-1P 293328-16-2P 293328-17-3P
 293328-18-4P **293328-19-5P** 293328-20-8P **293328-21-9P**
 293328-22-0P 293328-23-1P
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
 (control-agent adduct; controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 10250-27-8P 19312-05-1P 55277-95-7P 72877-60-2P,
 N-tert-Butyl-.alpha.-(3-pyridyl)nitrone 270901-81-0P 293328-26-4P
 393110-72-0P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (control-agent precursor; controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 100-44-7, Benzyl chloride, reactions 124-68-5 500-22-1,
 Pyridine-3-carboxaldehyde 1068-55-9, Isopropylmagnesium chloride 1122-91-4, 4-Bromobenzaldehyde 3376-24-7, N-tert-Butyl-.alpha.-phenylnitron 18162-48-6, tert-Butyldimethylchlorosilane 57497-39-9, N-tert-Butylhydroxylamine hydrochloride
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (control-agent precursor; controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 179419-05-7P 293328-09-3P, Dimethyl 5-vinylisophthalate 293328-10-6P
 393110-71-9P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (control-agent-adduct precursor; controlled free radical emulsion and

water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 78-67-1, AIBN 100-42-5, Styrene, reactions 100-43-6, 4-Vinylpyridine 1112-56-7, Tetravinyltin 1592-20-7, 4-Chloromethylstyrene 2039-82-9, 4-Bromostyrene 2633-67-2, 4-Chlorosulfonylstyrene 3317-61-1, 5,5-Dimethyl-.DELTA.1-pyrroline N-oxide 6921-35-3, 3,3-Dimethyloxetane 24424-99-5, Di-tert-butyl dicarbonate 51760-21-5, Dimethyl 5-bromoisophthalate

RL: RCT (Reactant); RACT (Reactant or reagent)
(control-agent-adduct precursor; controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 75-91-2, tert-Butyl hydroperoxide 7727-21-1, Potassium persulfate 227000-59-1

RL: CAT (Catalyst use); USES (Uses)
(controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 61015-94-9P 293328-07-1P 293328-08-2P 293328-27-5P

RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 9003-53-6P, Polystyrene 107391-68-4P, Butyl methacrylate-styrene block copolymer 110772-34-4P, Butyl acrylate-styrene block copolymer 120293-17-6P, Acrylic acid-styrene block copolymer 131830-42-7P, Acrylic acid-butyl acrylate-styrene block copolymer 293328-28-6P, 2-Acrylamido-2-methylpropanesulfonic acid-N-tert-butylacrylamide-styrene copolymer 393110-73-1P, 2-Acrylamido-2-methylpropanesulfonic acid-N-tert-butylacrylamide-butyl methacrylate-styrene copolymer 393110-74-2P, 2-Acrylamido-2-methylpropanesulfonic acid-N-tert-butylacrylamide-methyl methacrylate-2-(2-oxo-1-imidazolidinyl)ethyl methacrylate-styrene copolymer

RL: IMF (Industrial manufacture); PREP (Preparation)
(controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 76790-28-8P, N-tert-Butyl-.alpha.-(4-bromophenyl)nitrone

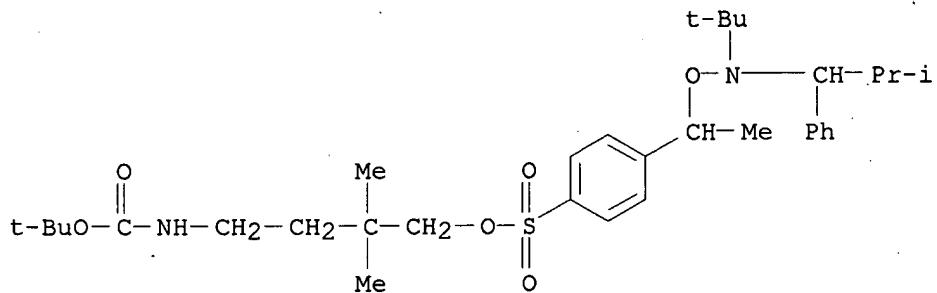
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

IT 293328-12-8P 293328-19-5P 293328-21-9P

RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(control-agent adduct; controlled free radical emulsion and water-based polymns. and seeded methodologies using nitroxides or their adducts with initiators or initiator fragments)

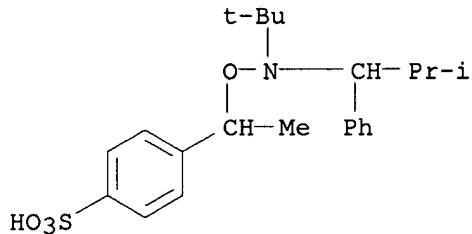
RN 293328-12-8 HCPLUS

CN Benzenesulfonic acid, 4-[1-[(1,1-dimethylethyl)(2-methyl-1-phenylpropyl)amino]oxy]ethyl]-, 4-[(1,1-dimethylethoxy)carbonyl]amino]-2,2-dimethylbutyl ester (9CI) (CA INDEX NAME)



RN 293328-19-5 HCPLUS

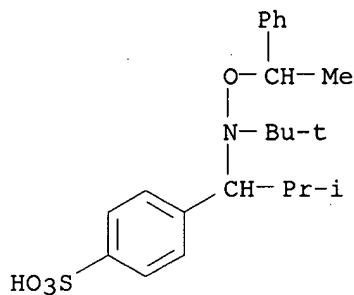
CN Benzenesulfonic acid, 4-[1-[(1,1-dimethylethyl)(2-methyl-1-phenylpropyl)amino]oxy]ethyl-, sodium salt (9CI) (CA INDEX NAME)



● Na

RN 293328-21-9 HCPLUS

CN Benzenesulfonic acid, 4-[1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2-methylpropyl-, lithium salt (9CI) (CA INDEX NAME)



● Li

L32 ANSWER 27 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2001:886252 HCPLUS

DN 136:20364

TI Catalysts of transition metal complex with a ligand for olefin

polymerization

IN Wang, Lin; Hauptman, Elisabeth; Johnson, Lynda K.; McCord, Elizabeth F.;
Wang, Ying; Ittel, Steven D.

PA E.I. Du Pont De Nemours and Company, USA

SO PCT Int. Appl., 190 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C08F004-00

CC 35-4 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

FAN.CNT 5

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001092342	A2	20011206	WO 2001-US17627	20010531
	WO 2001092342	A3	20030116		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	AU 2001075070	A5	20011211	AU 2001-75070	20010531
	US 2002028897	A1	20020307	US 2001-870596	20010531
	US 2002037982	A1	20020328	US 2001-870597	20010531
	US 6541585	B2	20030401		
	EP 1292624	A2	20030319	EP 2001-941742	20010531
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			

PRAI US 2000-208087P P 20000531
US 2000-211601P P 20000615
US 2000-214036P P 20000623
US 2001-264537P P 20010125
WO 2001-US17627 W 20010531

OS MARPAT 136:20364

AB Transition metal complexes of selected monoanionic phosphine ligands, which also contain a selected Group 15 or 16 (IUPAC) element and which are coordinated to a Group 3 to 11 (IUPAC) transition metal or a lanthanide metal, are **polymn.** catalysts for the (co)**polymn.** of olefins such as ethylene and .alpha.-olefins, and the copolymn. of such olefins with polar group-contg. olefins. These and other nickel complexes of neutral and monoanionic bidentate ligands copolymerize ethylene and polar comonomers, esp. **acrylates**, at relatively high ethylene pressures and surprisingly high temps., and give good incorporation of the polar comonomers and good polymer productivity. These copolymers are often unique structures, which are described.

ST polymn catalyst transition metal complex phosphine ligand prepn

IT Aluminoxanes

RL: CAT (Catalyst use); USES (Uses)

(Me; catalysts of transition metal complex with a ligand for olefin polymn.)

IT Polymerization catalysts

(catalysts of transition metal complex with a ligand for olefin polymn.)

IT Transition metal complexes

RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);
 USES (Uses)
 (catalysts of transition metal complex with a ligand for olefin
 polymn.)

IT Linear low density polyethylenes
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)
 (catalysts of transition metal complex with a ligand for olefin
 polymn.)

IT Polyolefins
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)
 (catalysts of transition metal complex with a ligand for olefin
 polymn.)

IT Ligands
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (catalysts of transition metal complex with a ligand for olefin
 polymn.)

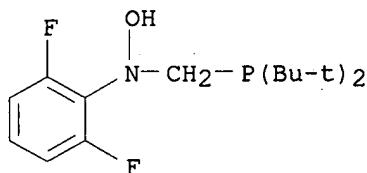
IT 74-85-1DP, Ethene, polymers with .alpha.-olefins polymers with
 .alpha.-olefins
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)
 (LLDPE; catalysts of transition metal complex with a ligand for olefin
 polymn.)

IT 7631-86-9, XPO-2402, uses 64083-96-1, Synclyst MS 13
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst support; catalysts of transition metal complex with a ligand
 for olefin polymn.)

IT 960-71-4, Triphenylborane 1109-15-5, Tris(pentafluorophenyl)borane
 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium,
 uses 7440-06-4, Platinum, uses 7440-32-6, Titanium, uses 7440-47-3,
 Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses
 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-67-7,
 Zirconium, uses
 RL: CAT (Catalyst use); USES (Uses)
 (catalysts of transition metal complex with a ligand for olefin
 polymn.)

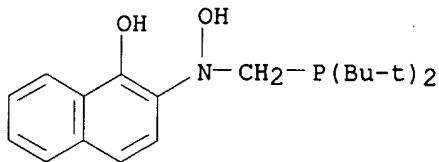
IT 37667-14-4DP, complexes with acenaphthylidene/ethylidenebenzenamine
 derivs. 49673-42-9DP, complexes with tetramethylethylenediamine/nickel
 acetylacetone 56252-55-2P 134286-30-9P 201140-86-5P
 202277-49-4DP, complexes with tetramethylethylenediamine/nickel
 acetylacetone 210882-54-5P 378793-32-9P 378793-33-0P
 378793-34-1P 378793-53-4P 378793-60-3P 378795-57-4P 378795-58-5P
 378795-59-6P 378795-60-9P 378795-61-0P 378795-62-1P 378795-63-2P
 378795-64-3P 378795-65-4P 378795-66-5P 378795-67-6P 378795-68-7P
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 378795-79-0P 378795-80-3P 378795-81-4P 378795-82-5P 378795-83-6P
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378797-26-3P 378797-27-4P 378797-28-5P
 RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP
 (Preparation); USES (Uses)
 (catalysts of transition metal complex with a ligand for olefin
 polymn.)
 IT 9002-88-4P, Ethylene homopolymer 25103-74-6P, Ethylene-methyl
 acrylate copolymer 25213-02-9P, Ethylene-1-hexene copolymer
 26636-18-0P, Ethylene-hexyl acrylate copolymer 29433-67-8P
 112155-82-5P 220230-29-5P 220230-30-8P 220230-39-7P 220230-51-3P
 378793-58-9P 378797-34-3P, Ethylene-isodecyl acrylate
 copolymer
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)
 (catalysts of transition metal complex with a ligand for olefin
 polymn.)
 IT 289708-46-9P 289708-58-3P 289709-14-4P 330812-70-9P 378797-30-9P
 378797-31-0P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (catalysts of transition metal complex with a ligand for olefin
 polymn.)
 IT 378797-29-6P 378797-33-2P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (ligand; catalysts of transition metal complex with a ligand for olefin
 polymn.)
 IT **378797-25-2P 378797-26-3P 378797-27-4P**
378797-28-5P
 RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP
 (Preparation); USES (Uses)
 (catalysts of transition metal complex with a ligand for olefin
 polymn.)
 RN 378797-25-2 HCAPLUS
 CN Benzenamine, N-[bis(1,1-dimethylethyl)phosphino]methyl]-2,6-difluoro-N-
 hydroxy-, lithium salt (9CI) (CA INDEX NAME)



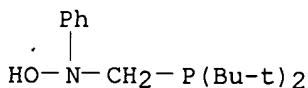
● Li

RN 378797-26-3 HCAPLUS
 CN 1-Naphthalenol, 2-[[[bis(1,1-dimethylethyl)phosphino]methyl]hydroxyamino]-
 , dilithium salt (9CI) (CA INDEX NAME)



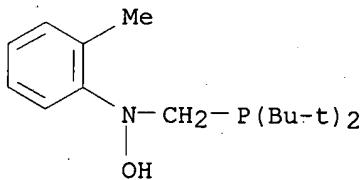
● 2 Li

RN 378797-27-4 HCPLUS
CN Benzenamine, N-[{[bis(1,1-dimethylethyl)phosphino]methyl}-N-hydroxy-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 378797-28-5 HCPLUS
CN Benzenamine, N-[{[bis(1,1-dimethylethyl)phosphino]methyl}-N-hydroxy-2-methyl-, lithium salt (9CI) (CA INDEX NAME)



● Li

L32 ANSWER 28 OF 59 HCPLUS COPYRIGHT 2003 ACS
AN 2001:818780 HCPLUS
DN 136:86109
TI Living Radical Polymerization: Use of an Excess of Nitroxide as a Rate Moderator
AU Lacroix-Desmazes, Patrick; Lutz, Jean-Francois; Chauvin, Florence;
Severac, Romain; Boutevin, Bernard
CS Laboratoire de Chimie Macromoleculaire, Ecole Nationale Superieure de
Chimie de Montpellier, Montpellier, 34296, Fr.
SO Macromolecules (2001), 34(26), 8866-8871
CODEN: MAMOBX; ISSN: 0024-9297
PB American Chemical Society
DT Journal

LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 AB The kinetics of the living radical polymn. of Bu acrylate (BuA) in the presence of an excess of N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl)-N-oxyl (DEPN) as a rate moderator has been studied in the temp. range 115-125 .degree.C. The equil. rate const. K = kd/kc between dormant and active chains was detd. exptl. from the slope of $\ln([BuA]_0/[BuA])$ vs time. It obeys the following Arrhenius relation: K = 4.93 .times. 105 exp(-119.3 kJ mol-1/RT), i.e., K = 1.09 .times. 10-10 mol L-1 at 125 .degree.C. Some straightforward anal. kinetic equations that only depend on the excess of DPN as the exptl. parameter were established. These equations were successfully applied to simulate the DPN-mediated polymn. of Bu acrylate initiated by either a styryl-DEPN alkoxyamine or an AIBN/DEPN bicomponent system. Last, the slow degrdn. of DPN was considered in order to account for the upward deviation of the kinetics when a great excess of DPN was used.

ST living radical polymn butyl acrylate nitroxide;
 kinetics radical polymn butyl acrylate nitroxide;
 phosphono nitroxide radical polymn butyl acrylate

IT Polymerization catalysts
 Polymerization kinetics
 (living, radical; kinetics of living radical polymn. of Bu acrylate in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate moderator)

IT 78-67-1, AIBN 188526-94-5, N-tert-Butyl-N-(1-diethylphosphono-2,2-dimethylpropyl)-N-oxyl 224575-62-6
 RL: CAT (Catalyst use); USES (Uses)
 (kinetics of living radical polymn. of Bu acrylate in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate moderator)

IT 9003-53-6DP, Polystyrene, reaction products with tert-butyl(diethylphosphonodimethylpropyl)oxyl 188526-94-5DP,
 reaction products with polystyrene
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (kinetics of living radical polymn. of Bu acrylate in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate moderator)

IT 141-32-2, Butyl acrylate
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (kinetics of living radical polymn. of Bu acrylate in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate moderator)

IT 9003-49-0P, Poly(butyl acrylate)
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (kinetics of living radical polymn. of Bu acrylate in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate moderator)

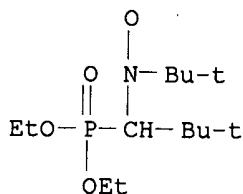
RE.CNT 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD
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(48) Souaille, M; Macromolecules, in press
(49) Veregin, R; Macromolecules 1996, V29, P2746 HCPLUS
IT 188526-94-5, N-tert-Butyl-N-(1-diethylphosphono-2,2-dimethylpropyl)-N-oxyl 224575-62-6
RL: CAT (Catalyst use); USES (Uses)
(kinetics of living radical polymn. of Bu acrylate
in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate

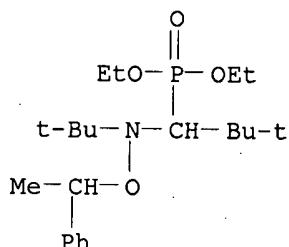
moderator)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)

RN 224575-62-6 HCPLUS

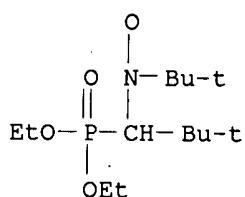
CN Phosphonic acid, [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



IT 188526-94-5DP, reaction products with polystyrene

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)(kinetics of living radical **polymn.** of Bu **acrylate**
in presence of tert-butyl(diethylphosphonodimethylpropyl)oxyl as rate
moderator)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)

L32 ANSWER 29 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2001:747176 HCPLUS

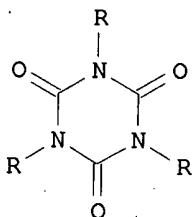
DN 135:289208

TI Multimodal polymers by controlled radical polymerization in the presence
of alkoxyamines

IN Guerret, Olivier; Robin, Sophie; Gnanou, Yves

PA Atofina, Fr.
 SO Eur. Pat. Appl., 24 pp.
 CODEN: EPXXDW
 DT Patent
 LA French
 IC ICM C08F004-00
 ICS C08F293-00; C08F002-38
 CC 35-4 (Chemistry of Synthetic High Polymers)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1142913	A1	20011010	EP 2001-106802	20010319
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	FR 2807439	A1	20011012	FR 2000-4557	20000407
	CA 2343339	AA	20011007	CA 2001-2343339	20010406
	CN 1318570	A	20011024	CN 2001-117832	20010407
	JP 2001316409	A2	20011113	JP 2001-109720	20010409
	US 2002040117	A1	20020404	US 2001-828476	20010409
PRAI	FR 2000-4557	A	20000407		
GI					



I, R=(CH₂)₂O₂CCHMeON(CMe₃)CH(CMe₃)P(O)(OEt)₂

AB Polymers with multimodal d.p. are manufd. by radical polymn. of monomers in the presence of alkoxyamines having .gtoreq.1 amine group and groups with mol. wt. >15 in the .beta.-position to the N, such as triazine deriv. I.
 ST multimodal polymer radical manuf alkoxyamine
 IT Amines, uses
 RL: CAT (Catalyst use); USES (Uses)
 (N-alkoxy-; multimodal polymers by controlled radical polymn. in presence of alkoxyamines)
 IT Polymerization catalysts
 (multimodal polymers by controlled radical polymn. in presence of alkoxyamines)
 IT Amines, uses
 RL: CAT (Catalyst use); USES (Uses)
 (polyamines, nonpolymeric, N-alkoxy-; multimodal polymers by controlled radical polymn. in presence of alkoxyamines)
 IT Polymerization
 (radical; multimodal polymers by controlled radical polymn. in presence of alkoxyamines)
 IT 78-67-1, Azobisisobutyronitrile 300811-93-2 300811-94-3
 300811-95-4 364731-73-7
 RL: CAT (Catalyst use); USES (Uses)

(multimodal polymers by controlled radical polymn. in presence of alkoxyamines)

IT 9003-49-0P, Polybutyl acrylate 9003-53-6P, Polystyrene
25767-47-9P, Butyl acrylate-styrene copolymer

RL: IMF (Industrial manufacture); PREP (Preparation)
(multimodal polymers by controlled radical polymn. in presence of alkoxyamines)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

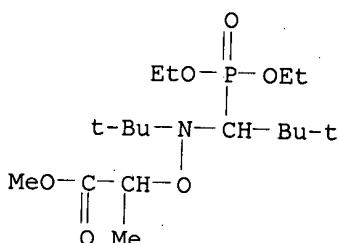
- (1) Atochem Elf Sa; EP 0992514 A 2000 HCAPLUS
- (2) Ciba Sc Holding Ag; WO 0037508 A 2000 HCAPLUS
- (3) Commw Scient Ind Res Org; EP 0135280 A 1985 HCAPLUS
- (4) Hope, P; WO 9813392 A 1998 HCAPLUS
- (5) Moffat, K; US 5498679 A 1996 HCAPLUS
- (6) Rime, F; WO 0018807 A 2000 HCAPLUS
- (7) Winter, R; US 5877344 A 1999 HCAPLUS

IT 300811-93-2 300811-94-3

RL: CAT (Catalyst use); USES (Uses)
(multimodal polymers by controlled radical polymn. in presence of alkoxyamines)

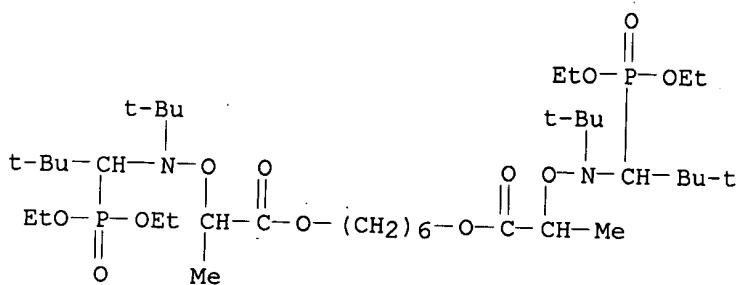
RN 300811-93-2 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (9CI) (CA INDEX NAME)



RN 300811-94-3 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, 1,6-hexanediyI ester, 6,6'-dioxide (9CI) (CA INDEX NAME)



L32 ANSWER 30 OF 59 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:167188 HCAPLUS
DN 134:340746

TI The persistent radical effect in nitroxide mediated polymerization:
 experimental validity
 AU Lutz, Jean-Francois; Lacroix-Desmazes, Patrick; Boutevin, Bernard.
 CS Laboratoire de Chimie Macromoleculaire UMR-CNRS 5076, Ecole Nationale
 Supérieure de Chimie de Montpellier 8, Montpellier, 34296, Fr.
 SO Macromolecular Rapid Communications (2001), 22(3), 189-193
 CODEN: MRCOE3; ISSN: 1022-1336
 PB Wiley-VCH Verlag GmbH
 DT Journal
 LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 AB The **free-radical polymn.** of styrene has been studied at 123.degree.C in the presence of a betaphosphonylated alkoxyamine (diethyl[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl phosphonate) (styryl-DEPN). The persistent radical effect is undoubtedly obsd. exptl. until the effect of viscosity on the rate const. of termination is no longer negligible. The kinetic laws of the persistent radical effect allow us to calc. the pseudo equil. const. of dissociation/combination between dormant and active species Kpolystyryl-DEPN = 6.1 .times. 10⁻⁹ mol .cntdot. L⁻¹ at 123.degree.C. We have verified the reliability of this const. by computer simulation in comparison with the exptl. data.
 ST radical effect nitroxide mediated polymn styrene modeling
 IT Simulation and Modeling, physicochemical
 Viscosity
 (exptl. validity of persistent radical effect in nitroxide mediated polymn.)
 IT Polymerization kinetics
 (radical; exptl. validity of persistent radical effect in nitroxide mediated polymn.)
 IT 100-42-5, Styrene, reactions 224575-62-6
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (exptl. validity of persistent radical effect in nitroxide mediated polymn.)
 IT 9003-53-6P, Polystyrene
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (exptl. validity of persistent radical effect in nitroxide mediated polymn.)
 RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
 (1) Benoit, D; ACS Symp Series 685 1998, P225 HCPLUS
 (2) Benoit, D; J Am Chem Soc 2000, V122, P5929 HCPLUS
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 (4) Buback, M; Macromol Chem Phys 1995, V196, P3267 HCPLUS
 (5) Buback, M; Macromol Chem Phys 1997, V198, P1455 HCPLUS
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 (7) Fischer, H; J Polym Sci Part A: Polym Chem 1999, V37, P1885 HCPLUS
 (8) Fischer, H; Macromolecules 1997, V30, P5666 HCPLUS
 (9) Fukuda, T; Macromol Rapid Commun 2000, V21, P151 HCPLUS
 (10) Fukuda, T; Macromolecules 1996, V29, P6393 HCPLUS
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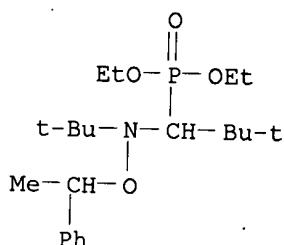
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- (29) Yamada, B; Macromolecules 1991, V24, P5234 HCPLUS

IT 224575-62-6

RL: RCT (Reactant); RACT (Reactant or reagent)
(exptl. validity of persistent radical effect in nitroxide mediated
polymn.)

RN 224575-62-6 HCPLUS

CN Phosphonic acid, [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



L32 ANSWER 31 OF 59 HCPLUS COPYRIGHT 2003 ACS
AN 2001:76188 HCPLUS
DN 134:318488
TI Cross termination rate constants of alkyl radicals with nitroxides - a key step in living radical polymerization
AU Sobek, J.; Martschke, R.; Fischer, H.
CS Institute of Physical Chemistry, University of Zurich, Zurich, 8057, Switz.
SO Journal of Information Recording (2000), 25(3-4), 455-463
CODEN: JIREFL; ISSN: 1025-6008
PB Gordon & Breach Science Publishers
DT Journal
LA English
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35
AB In search of improved initiators for the living **free radical polymn.** mediated by nitroxides, a complete description of the individual processes is required. The kinetics is rather complex, in particular the rate consts. of cross termination are crucial since they greatly influence the course of the reaction. Therefore, the authors investigated the reaction rate consts. of a wide variety of C-centered radicals with various nitroxides. The authors present and discuss the temp. dependence of rate consts. for the reaction between acetic- and isobutyric acid ester radicals and various nitroxides obtained by laser flash photolysis measurements.

ST photolysis study reaction kinetics alkyl radical nitroxide; methoxycarbonylmethyl radical nitroxide reaction kinetics flash photolysis; isobutyric acid ester radical nitroxide reaction kinetics flash photolysis

IT Photolysis kinetics
Reaction kinetics
(flash photolysis study of temp. dependence of rate consts. for reaction between alkyl radicals and nitroxides)

IT Nitroxides
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(flash photolysis study of temp. dependence of rate consts. for reaction between alkyl radicals and nitroxides)

IT Polymerization catalysts
(flash photolysis study of temp. dependence of rate consts. for reaction between alkyl radicals and nitroxides in relation to)

IT Polymerization kinetics
(living, free radical; flash photolysis study of temp. dependence of rate consts. for reaction between alkyl radicals and nitroxides in relation to)

IT 2406-25-9 2564-83-2 2887-41-4, 2-Methoxycarbonyl-2-propyl radical
22104-03-6 54668-31-4, (Methoxycarbonyl)methyl 61015-94-9
188526-94-5
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(flash photolysis study of temp. dependence of rate consts. for reaction between alkyl radicals and nitroxides)

IT 10472-32-9, 2,2',4,4'-Tetramethyldimethylacetonedicarboxylate
53544-93-7, 2,2,5,5-Tetramethyl-4-phenyl-3-azahexane-3-oxy!
RL: RCT (Reactant); RACT (Reactant or reagent)
(flash photolysis study of temp. dependence of rate consts. for reaction between alkyl radicals and nitroxides)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD

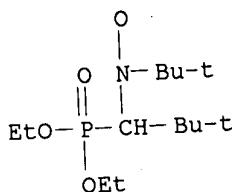
RE

- (1) Benoit, D; J Am Chem Soc 1999, V121, P3904 HCPLUS
- (2) Bowry, V; J Am Chem Soc 1992, V114, P4992 HCPLUS
- (3) Fischer, H; J Polym Sci Part A: Polym Chem 1999, V37, P1885 HCPLUS
- (4) Fischer, H; Macromol 1997, V30, P5666 HCPLUS
- (5) Frechet, J; Science 1994, V263, P1710 HCPLUS
- (6) Grimaldi, S; Polym Prepr 1997, V38, P651 HCPLUS
- (7) Hawker, C; Acc Chem Res 1997, V30, P373 HCPLUS
- (8) Kothe, T; J Chem Soc, Perkin Trans 2 1998, P1553 HCPLUS
- (9) Marque, S; unpublished
- (10) Martschke, R; Helv Chim Acta 1997, V80, P1363 HCPLUS
- (11) Mozurkewich, M; J Phys Chem 1984, V88, P6429 HCPLUS
- (12) Paul, H; J Am Chem Soc 1978, V100, P4520 HCPLUS
- (13) Ruegge, D; J Chem Soc, Faraday Trans 1 1988, V84, P3187 HCPLUS
- (14) Sobek, J; unpublished
- (15) Tsentalovitch, Y; J Chem Soc, Perkin Trans 2 1994, P729
- (16) Turro, N; J Am Chem Soc 1982, V104, P1754 HCPLUS
- (17) Webster, O; Science 1991, V251, P887 HCPLUS

IT **188526-94-5**
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(flash photolysis study of temp. dependence of rate consts. for reaction between alkyl radicals and nitroxides)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)



L32 ANSWER 32 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2001:44475 HCPLUS

DN 134:72036

TI Controlled-radical polymerization or copolymerization process

IN Robin, Sophie; Gnanou, Yves

PA Elf Atochem S.A., Fr.

SO Fr. Demande, 42 pp.

CODEN: FRXXBL

DT Patent

LA French

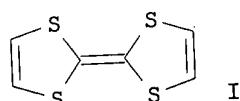
IC ICM C08F004-00

ICS C08F020-18

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

FAN.CNT 1	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	-----	-----	-----	-----
PI FR 2791687	A1	20001006	FR 1999-4031	19990331	
PRAI FR 1999-4031		19990331			
OS MARPAT 134:72036					
GI					



AB Monomers are polymd. in the presence of stable free radicals (e.g., nitroxides), electron donors, and optionally, electron acceptors, where the ratio of electron donors to electron acceptors is >1. Me methacrylate was polymd. in the presence of (C2H5O)2P(:O)C(tert-Bu)N(tert-Bu)O. and I.

ST stable free radical polymn; methyl methacrylate polymn nitroxide electron donor

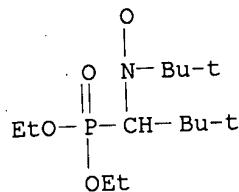
IT Electron donors
(controlled-radical polymn. or copolymn. process)

IT Nitroxides

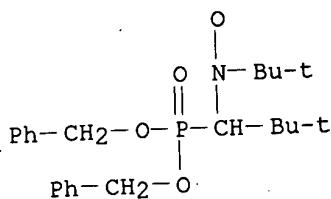
RL: CAT (Catalyst use); USES (Uses)
(controlled-radical polymn. or copolymn. process)

IT Polymerization
(radical; controlled-radical polymn. or copolymn. process)
2226-96-2,
2154-68-9, 3-Carboxy-2,2,5,5-tetramethyl-pyrrolidinyloxy 2516-92-9 2525-39-5,
4-Hydroxy-2,2,6,6-tetramethyl-1-piperidinyloxy 2564-83-2, 2,2,6,6-Tetramethyl-1-
2,4,6-Tri-tert-butylphenoxy 2896-70-0, 4-Oxo-2,2,6,6-tetramethyl-1-piperidinyloxy

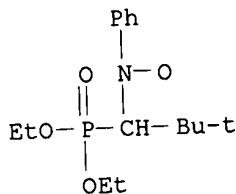
3229-53-6, 2,2,5,5 Tetramethyl-1-pyrrolidinyloxy 22690-04-6 31366-25-3
 61015-94-9 64793-59-5 95407-69-5, 4-Methoxy-2,2,6,6-tetramethyl-1-
 piperidinyloxy 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-
 dimethyl propylnitroxide 188707-72-4, N-Tert-Butyl-1-
 dibenzylphosphono-2,2-dimethyl propyl nitroxide 200345-02-4
200345-03-5, N-Phenyl-1-diethylphosphono-2,2-dimethyl
 propylnitroxide 200345-04-6, N-Phenyl-1-diethylphosphono-1-methyl ethyl
 nitroxide 200345-05-7, N-(1-Phenyl 2-methyl propyl)-1-
 diethylphosphono-1-methyl ethyl nitroxide 258354-63-1,
 N-Tert-Butyl-[(1-diethylphosphono)-2-methyl-propyl]nitroxide
261527-17-7, N-tert-Butyl-1-di(2,2,2-trifluoroethyl)phosphono-2,2-
 dimethyl propyl nitroxide 263355-91-5 302906-69-0,
 N-(1-Phenylbenzyl)-[(1-diethylphosphono)-1-methylethyl] nitroxide
 RL: **CAT (Catalyst use)**; USES (Uses)
 (controlled-radical polymn. or copolymn. process)
 IT 9011-14-7P, Methyl **methacrylate** homopolymer
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (controlled-radical **polymn.** or copolymn. process)
 IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethyl
 propylnitroxide 188707-72-4, N-Tert-Butyl-1-dibenzylphosphono-
 2,2-dimethyl propyl nitroxide 200345-03-5, N-Phenyl-1-
 diethylphosphono-2,2-dimethyl propylnitroxide 200345-05-7,
 N-(1-Phenyl 2-methyl propyl)-1-diethylphosphono-1-methyl ethyl nitroxide
258354-63-1, N-Tert-Butyl-[(1-diethylphosphono)-2-methyl-
 propyl]nitroxide 261527-17-7, N-tert-Butyl-1-di(2,2,2-
 trifluoroethyl)phosphono-2,2-dimethyl propyl nitroxide 263355-91-5
302906-69-0, N-(1-Phenylbenzyl)-[(1-diethylphosphono)-1-
 methylethyl] nitroxide
 RL: **CAT (Catalyst use)**; USES (Uses)
 (controlled-radical polymn. or copolymn. process)
 RN 188526-94-5 HCPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)



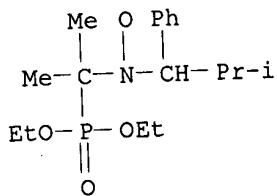
RN 188707-72-4 HCPLUS
 CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl
 1,1-dimethylethyl (9CI) (CA INDEX NAME)



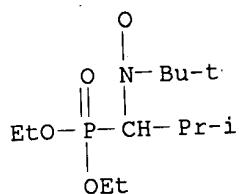
RN 200345-03-5 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl phenyl (9CI) (CA
 INDEX NAME)



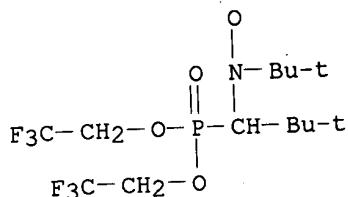
RN 200345-05-7 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-1-methylethyl 2-methyl-1-phenylpropyl
 (9CI) (CA INDEX NAME)



RN 258354-63-1 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2-methylpropyl 1,1-dimethylethyl (9CI)
 (CA INDEX NAME)

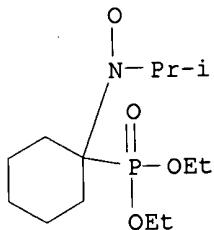


RN 261527-17-7 HCAPLUS
 CN Nitroxide, 1-[bis(2,2,2-trifluoroethoxy)phosphinyl]-2,2-dimethylpropyl
 1,1-dimethylethyl (9CI) (CA INDEX NAME)

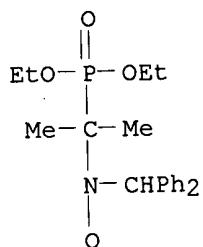


RN 263355-91-5 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)cyclohexyl 1-methylethyl (9CI) (CA INDEX

NAME)



RN 302906-69-0 HCPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-1-methylethyl diphenylmethyl (9CI) (CA
 INDEX NAME)



L32 ANSWER 33 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 2001:31452 HCPLUS
 DN 134:101275
 TI Preparation of mono and multifunctional alkoxyamines for forming nitroxyl
 radical **initiators** and regulators useful in the preparation of
 polymers with narrow polydispersity
 IN Kramer, Andreas; Nesvadba, Peter; Zink, Marie-Odile; Wunderlich, Wiebke
 PA Ciba Specialty Chemicals Holding Inc., Switz.
 SO PCT Int. Appl., 74 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C07C239-20
 ICS C07D211-94; C08F004-00
 CC 35-3 (Chemistry of Synthetic High Polymers)

FAN.CNT 1	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001002345	A2	20010111	WO 2000-EP5899	20000626
	WO 2001002345	A3	20010719		
				W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,	

CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 EP 1189875 A2 20020327 EP 2000-951302 20000626
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, PT, IE,
 SI, LT, LV, FI, RO
 JP 2003503474 T2 20030128 JP 2001-507787 20000626
 PRAI EP 1999-810567 A 19990702
 WO 2000-EP5899 W 20000626
 OS MARPAT 134:101275

AB The title alkoxyamines esp. useful for the living **polymn.** of unsatd. monomers or/and oligomers giving polymers with good conversion are compds. bearing groups which can liberate stable **free nitroxyl radicals** of specific structures.

ST alkoxyamine multifunctional nitroxyl **initiator** radical living polymn; narrow polydispersity radical living polymn; mol wt distribution living polymn nitroxyl radical **initiator**

IT Amines, preparation
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);
 USES (Uses)
 (alkoxylated, derivs., **initiator**; prepn. of mono and multifunctional alkoxyamines as **initiators for free radical polymn.** with narrow polydispersity)

IT Polymerization
 (living, radical; prepn. of mono and multifunctional alkoxyamines as **initiators for free radical polymn.**
 . with narrow polydispersity)

IT Polymerization catalysts
 (living; prepn. of mono and multifunctional alkoxyamines as **initiators for free radical polymn.**
 . with narrow polydispersity)

IT Nitroxides
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);
 USES (Uses)
 (prepn. of mono and multifunctional alkoxyamines as **initiators for free radical polymn.** with narrow polydispersity)

IT Polymerization catalysts
 (radical; prepn. of mono and multifunctional alkoxyamines as **initiators for free radical polymn.**
 . with narrow polydispersity)

IT 243972-13-6P 243972-14-7P 243972-16-9P 264280-52-6P 319457-95-9P
 319457-96-0P 319457-97-1P 319458-04-3P 319458-08-7P 319458-11-2P
 319458-12-3P 319458-15-6P 319458-16-7P 319458-17-8P 319458-25-8P
 319458-26-9P 319458-28-1P 319458-30-5P 319458-31-6P 319458-33-8P
 319458-35-0P 319458-36-1P 319458-38-3P 319458-39-4P 319458-41-8P
 319458-42-9P 319458-44-1P 319458-45-2P 319458-47-4P 319458-48-5P
 319458-50-9P **319458-52-1P 319458-53-2P**
 RL: CAT (Catalyst use); IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
 (**initiator/intermediate for multifunctional initiator**
 ; prepn. of mono and multifunctional alkoxyamines as **initiators for free radical polymn.** with narrow polydispersity)

IT 264280-51-5P 319457-98-2P 319457-99-3P 319458-00-9P 319458-01-0P
 319458-02-1P 319458-03-2P 319458-05-4P 319458-06-5P 319458-07-6P
 319458-09-8P 319458-10-1P 319458-13-4P 319458-14-5P 319458-18-9P
 319458-19-0P 319458-20-3P 319458-21-4P 319458-22-5P 319458-23-6P
 319458-24-7P 319458-27-0P 319458-29-2P 319458-32-7P 319458-34-9P
 319458-37-2P 319458-40-7P 319458-43-0P 319458-46-3P 319458-49-6P

319458-51-0P 319458-54-3P

RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); PREP (Preparation); USES (Uses)

(initiator; prepn. of mono and multifunctional alkoxyamines as initiators for free radical polymn. with narrow polydispersity)

IT 9003-49-0P, Butyl acrylate homopolymer 9003-53-6P, Polystyrene

RL: IMF (Industrial manufacture); PREP (Preparation)

(linear or star-shaped; prepn. of mono and multifunctional alkoxyamines as initiators for free radical polymn. with narrow polydispersity)

IT 106-95-6, Allyl bromide, reactions 108-77-0, Cyanuric chloride
115-77-5, Pentaerythritol, reactions 535-11-5, Ethyl 2-bromopropionate
623-24-5, .alpha.,.alpha.'-Dibromo-p-xylene 814-68-6, Acryloyl
chloride 937-30-4 2226-96-2, 4-Hydroxy-2,2,6,6-tetramethylpiperidin-1-
oxyl 3095-73-6, Hexakis(bromomethyl)benzene 3245-23-6, 4-Ethylphenyl
acetate 5675-51-4, 1,12-Dodecanediol 15442-91-8, 1,2,4,5-
Tetrakis(bromomethyl)benzene 20248-86-6, 4,4'-Bis(bromomethyl)biphenyl
61745-37-7 264279-93-8

RL: RCT (Reactant); RACT (Reactant or reagent)
(reactant for initiator; prepn. of mono and multifunctional alkoxyamines as initiators for free radical polymn. with narrow polydispersity)

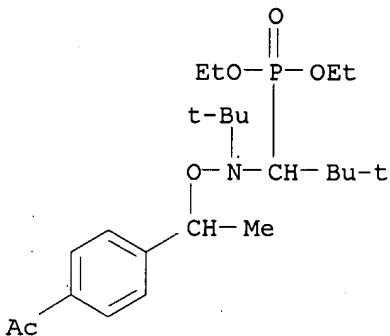
IT 319458-52-1P 319458-53-2P

RL: **CAT (Catalyst use)**; IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(initiator/intermediate for multifunctional initiator;
prepn. of mono and multifunctional alkoxyamines as initiators for free radical polymn. with narrow polydispersity)

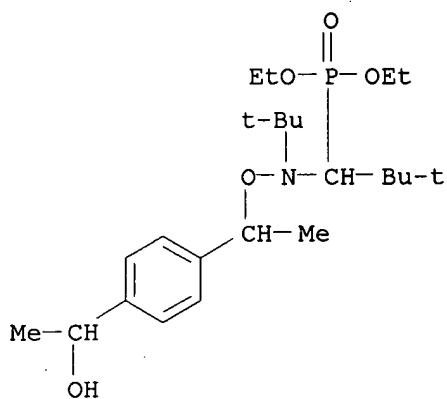
RN 319458-52-1 HCPLUS

CN Phosphonic acid, [1-[[1-(4-acetylphenyl)ethoxy](1,1-dimethylethyl)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



RN 319458-53-2 HCPLUS

CN Phosphonic acid, [1-[(1,1-dimethylethyl)[1-[4-(1-hydroxyethyl)phenyl]ethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



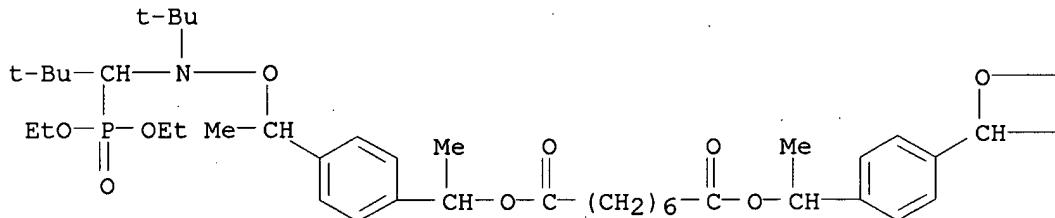
IT 319458-54-3P

RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
 (initiator; prepn. of mono and multifunctional alkoxyamines
 as initiators for free radical
 polymn. with narrow polydispersity)

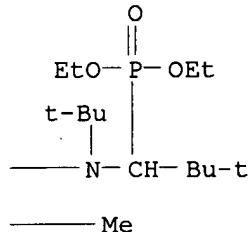
RN 319458-54-3 HCAPLUS

CN Octanedioic acid, bis[1-[4-[3,4-bis(1,1-dimethylethyl)-5-ethoxy-1-methyl-5-oxido-2,6-dioxa-3-aza-5-phosphaoct-1-yl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



L32 ANSWER 34 OF 59 HCPLUS COPYRIGHT 2003 ACS
AN 2000:882384 HCPLUS
DN 134:178862
TI End-group fidelity in nitroxide-mediated living **free-radical polymerizations**
AU Rodlert, Marlene; Harth, Eva; Rees, Ian; Hawker, Craig J.
CS IBM Almaden Research Center, San Jose, CA, 95120-6099, USA
SO Journal of Polymer Science, Part A: Polymer Chemistry (2000), 38(Suppl.), 4749-4763
CODEN: JPACEC; ISSN: 0887-624X
PB John Wiley & Sons, Inc.
DT Journal
LA English
CC 35-3 (Chemistry of Synthetic High Polymers)
AB New nitroxides based on the 2,2,5-trimethyl-4-phenyl-3-azahexane-3-oxy skeleton were used to examine chain-end control during the prepn. of polystyrene and poly(*t*-Bu **acrylate**) under living **free-radical** conditions. Alkoxyamine-based **initiators** with a chromophore attached to either the **initiating** fragment or the mediating nitroxide fragment were prepd., and the extent of the incorporation of the chromophores at either the **initiating** end or the propagating chain end was detd. In contrast to 2,2,6,6-tetra-Me piperidinoxy (TEMPO), the incorporation of the **initiating** and terminating fragment into the polymer chain was extremely high. For both poly(*t*-Bu **acrylate**) and polystyrene with mol. wts. less than or equal to 70,000, incorporations at the **initiating** end of greater than 97% were obsd. At the terminating chain end, incorporations of greater than 95% were obtained for mol. wts. less than or equal to 50,000. The level of incorporation tended to decrease slightly at higher mol. wts. because of the loss of the alkoxyamine propagating unit, which had important consequences for block copolymer formation. These results clearly show that these new .alpha.-H nitroxides could control the **polymn.** of vinyl monomers such as styrene and *t*-Bu **acrylate** to an extremely high degree, comparable to anionic and atom transfer radical **polymn.** procedures.
ST phenylazahexanoxy catalyst living **polymn** styrene **acrylate**; polystyrene prepn living **polymn** phenylazahexanoxy; polybutyl **acrylate** prepn living **polymn** phenylazahexanoxy; alkoxyamine **polymn** catalyst styrene **acrylate**
IT **Polymerization catalysts**
(living, radical; prepn. of polystyrene and poly(*tert*-Bu **acrylate**) in presence of nitroxide based on trimethylphenylazahexanoxy skeleton)
IT 326474-17-3P **326474-18-4P** 326474-24-2P
RL: **CAT (Catalyst use)**; **SPN (Synthetic preparation)**; **PREP (Preparation)**; **USES (Uses)**
(catalysts; prepn. as catalysts for **polymn.** of styrene and *tert*-Bu **acrylate**)
IT 326474-20-8P **326474-26-4P**
RL: **SPN (Synthetic preparation)**; **PREP (Preparation)**
(prepn. and characterization of)
IT 326474-22-0P
RL: **RCT (Reactant)**; **SPN (Synthetic preparation)**; **PREP (Preparation)**; **RACT (Reactant or reagent)**
(prepn. and hydrolysis of)
IT 293328-23-1P 326474-25-3P
RL: **RCT (Reactant)**; **SPN (Synthetic preparation)**; **PREP (Preparation)**; **RACT**

(Reactant or reagent)
 (prepn. and reaction with dansyl chloride)

IT 17100-68-4P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and reaction with magnesium)

IT 326474-23-1P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and reaction with pyrenebutyric acid)

IT 326474-19-5P 326474-21-9P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (prepn. and reaction with styrene)

IT 9003-53-6P, Polystyrene 25232-27-3P, Poly(tert-butyl acrylate)
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. in presence of nitroxide based on trimethylphenylazahexanoxy skeleton)

IT 85664-55-7
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with (tetrahydropyroxy)phenylmagnesium bromide)

IT 605-65-2, Dansyl chloride
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with aminomethyl-contg. phenylazahexane deriv.)

IT 25338-56-1, Pyrenebutyric acid
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with azahexane deriv.)

IT 110-87-2, 3,4-Dihydro-2H-pyran
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with bromobenzyl alc.)

IT 194785-98-3, 4-Pyrenebutanol
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with chloromethyl alkoxyamine deriv.)

IT 873-75-6, 4-Bromobenzyl alcohol
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with dihydropyran)

IT 36637-44-2 195388-58-0
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with nitrone deriv.)

IT 227000-85-3
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with pyrenebutanol)

IT 100-42-5, Styrene, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction with trimethyl(tetrahydropyranyl)phenylazahexanenitroxide)

RE.CNT 57 THERE ARE 57 CITED REFERENCES AVAILABLE FOR THIS RECORD

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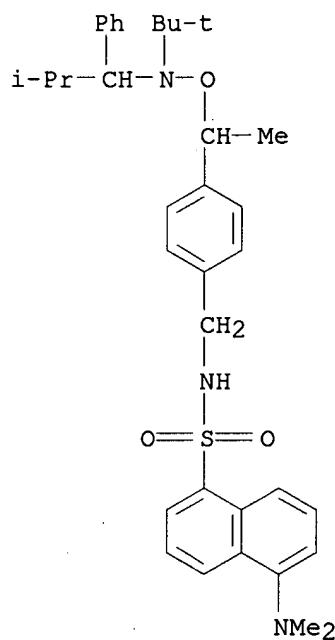
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IT 326474-18-4P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (catalysts; prepn. as catalysts for polymn. of styrene and
 tert-Bu acrylate)

RN 326474-18-4 HCPLUS

CN 1-Naphthalenesulfonamide, 5-(dimethylamino)-N-[[4-[1-[[[1,1-dimethylethyl)(2-methyl-1-phenylpropyl)amino]oxy]ethyl]phenyl]methyl]-
 (9CI) (CA INDEX NAME)



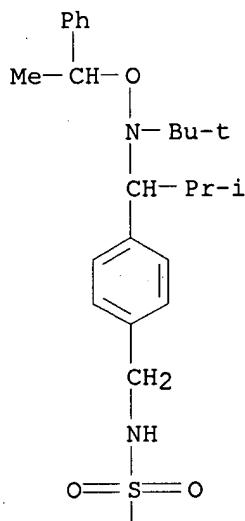
IT 326474-26-4P

RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and characterization of)

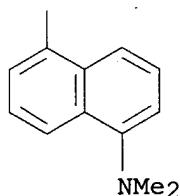
RN 326474-26-4 HCPLUS

CN 1-Naphthalenesulfonamide, 5-(dimethylamino)-N-[(4-[1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2-methylpropyl]phenyl)methyl]- (9CI)
(CA INDEX NAME)

PAGE 1-A



PAGE 2-A



L32 ANSWER 35 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2000:842098 HCPLUS

DN 134:29789

TI Alkoxyamine phosphonates and their use as polymerization catalysts
IN Guerret, Olivier; Couturier, Jean-Luc; Lutz, Jean-Francois; Le Mercier,
Christophe; Robin, Sophie; Vuillemin, Bruno

PA Atofina, Fr.

SO PCT Int. Appl., 59 pp.

CODEN: PIXXD2

DT Patent

LA French

IC ICM C07C239-20

ICS C07F009-40; C07D251-32; C08F004-00

CC 35-3 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 29

FAN.CNT 1

PATENT NO.

KIND DATE

APPLICATION NO. DATE

PI WO 2000071501 A1 20001130 WO 2000-FR1287 20000512
 W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU,
 CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,
 IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,
 MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,
 SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM,
 AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,
 DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,
 CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 FR 2794459 A1 20001208 FR 1999-6329 19990519
 EP 1178955 A1 20020213 EP 2000-929608 20000512
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO
 JP 2003500378 T2 20030107 JP 2000-619758 20000512
 PRAI FR 1999-6329 A 19990519
 WO 2000-FR1287 W 20000512
 AB Alkoxyamine phosphonates contg. 2-3 alkoxyamine groups are obtained from .beta.-substituted nitroxides such as di-Et 2,2-dimethyl-1-(tert-butylamino)propylphosphonate N-oxide (I) and are suitable for application as radical **polymn.** catalysts with good control. The inventive compds. can be used as **initiators** for (co)polymns. of at least one radically **polymerizable** monomer. Thus, I was condensed (2:1) with the Br groups in 1,6-hexanediol bis(2-bromopropionate) to give a bis(alkoxyamine phosphonate) which could be used to homopolymerize styrene or block copolymerize styrene with Bu **acrylate**.
 ST phosphonate alkoxyamine prodn radical polymn catalyst; nitroxide condensation org halide alkoxyamine prodn
 IT Polymerization catalysts
 (radical; prodn. of alkoxyamine phosphonates for use as)
 IT 9003-49-0P, Poly(butyl **acrylate**) 9003-53-6P, Polystyrene
 25767-47-9P, Butyl **acrylate**-styrene copolymer
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (alkoxyamine phosphonates as radical **polymn.** catalysts for prodn. of)
 IT 3030-47-5, PMDETA 7440-50-8, Copper, uses 7787-70-4, Cuprous bromide
 16858-01-8, Tris(2-pyridylmethyl)amine 37275-48-2, Bipyridine
 RL: CAT (Catalyst use); USES (Uses)
 (in prodn. of alkoxyamine phosphonates for use as radical polymn.
 catalysts)
 IT 310878-87-6
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (intermediate; prodn. of alkoxyamine phosphonates for use as radical polymn. catalysts)
 IT 300811-94-3P 300811-95-4P 310878-79-6P
 310878-80-9P 310878-81-0P 310878-82-1P
 310878-83-2P
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP
 (Preparation); USES (Uses)
 (prodn. of alkoxyamine phosphonates for use as radical polymn.
 catalysts)
 IT 563-76-8, 2-Bromopropionyl bromide 839-90-7, 1,3,5-Tris(2-hydroxyethyl)cyanuric acid 17194-87-5, p-Bis(1-bromoethyl)benzene 52255-99-9 **188526-94-5** 310878-84-3, 1,6-Hexanediol bis(2-bromopropionate) 310878-85-4 310878-86-5 310878-88-7
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (starting material; prodn. of alkoxyamine phosphonates for use as

radical polymn. catalysts)

IT 110772-34-4P, Butyl acrylate-styrene block copolymer
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (triblock; alkoxyamine phosphonates as radical polymn.
 catalysts for prodn. of)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

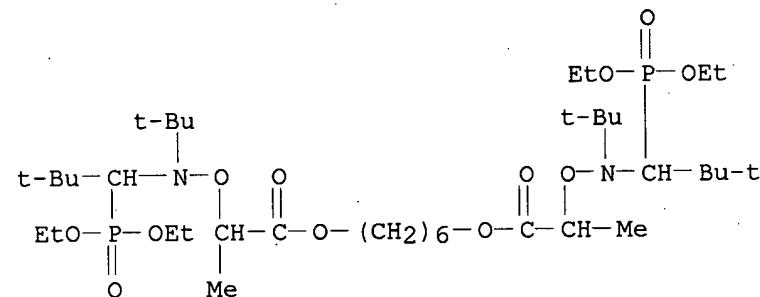
RE

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 HCAPLUS
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 HCAPLUS

IT 300811-94-3P 310878-79-6P 310878-80-9P
 310878-81-0P 310878-82-1P 310878-83-2P
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP
 (Preparation); USES (Uses)
 (prodn. of alkoxyamine phosphonates for use as radical polymn.
 catalysts)

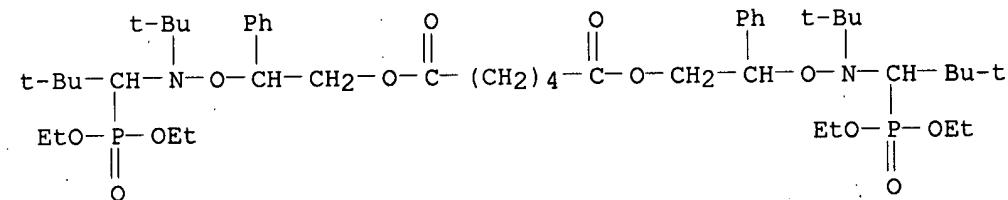
RN 300811-94-3 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-
 ethoxy-2-methyl-, 1,6-hexanediyl ester, 6,6'-dioxide (9CI) (CA INDEX
 NAME)



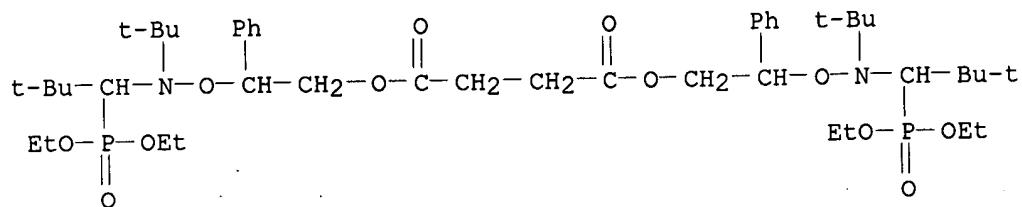
RN 310878-79-6 HCAPLUS

CN Hexanedioic acid, bis[4,5-bis(1,1-dimethylethyl)-6-ethoxy-6-oxido-2-phenyl-
 3,7-dioxa-4-aza-6-phosphonon-1-yl] ester (9CI) (CA INDEX NAME)



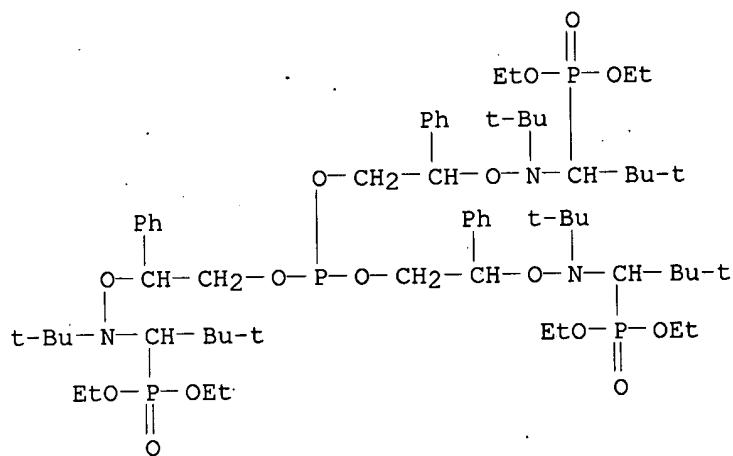
RN 310878-80-9 HCAPLUS

CN Butanedioic acid, bis[4,5-bis(1,1-dimethylethyl)-6-ethoxy-6-oxido-2-phenyl-
 3,7-dioxa-4-aza-6-phosphonon-1-yl] ester (9CI) (CA INDEX NAME)



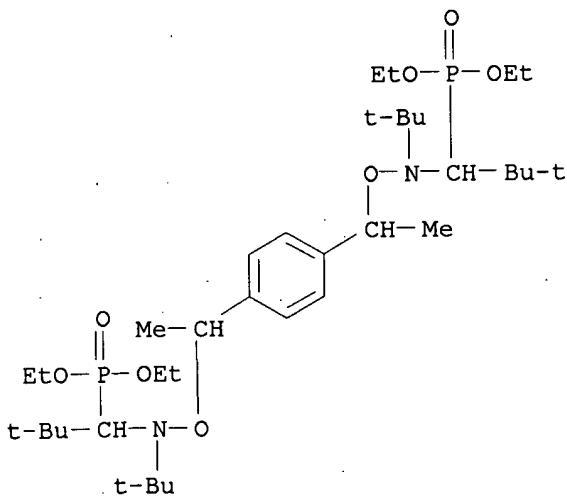
RN 310878-81-0 HCAPLUS

CN Phosphonic acid, [phosphinidynetris[oxy(1-phenyl-2,1-ethanediyl)oxy[(1,1-dimethylethyl)imino](2,2-dimethylpropylidene)]tris-, hexaethyl ester (9CI) (CA INDEX NAME)

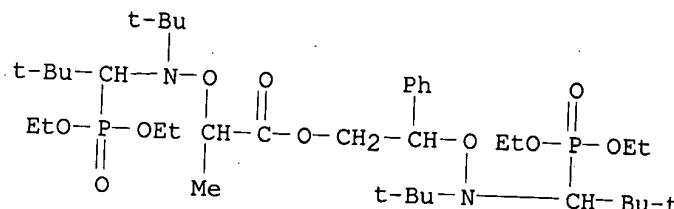


RN 310878-82-1 HCAPLUS

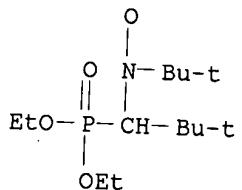
CN Phosphonic acid, [1,4-phenylenebis[ethylideneoxy[(1,1-dimethylethyl)imino](2,2-dimethylpropylidene)]bis-, tetraethyl ester (9CI) (CA INDEX NAME)



RN 310878-83-2 HCPLUS
 CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-6-oxido-2-phenyl-3,7-dioxa-4-aza-6-phosphon-1-yl ester, 6-oxide (9CI) (CA INDEX NAME)



IT 188526-94-5
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (starting material; prodn. of alkoxyamine phosphonates for use as
 radical polymn. catalysts)
 RN 188526-94-5 HCPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)



L32 ANSWER 36 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 2000:814527 HCPLUS
 DN 133:350716
 TI Process for polymerization using unsymmetrically free-radical initiators to control type and degree of polymerization and unsymmetrically free-radical initiators
 IN Matthews, Randall Stryker; Smith, Steven Daryl
 PA The Procter & Gamble Co., USA
 SO PCT Int. Appl., 33 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C08F004-04
 ICS C08F002-06
 CC 35-4 (Chemistry of Synthetic High Polymers)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000068275	A1	20001116	WO 2000-US12700	20000509
	W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT,			

RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,
DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
PRAI US 1999-133338P P 19990510

AB The process for **initiating polymn.** comprises (a) reacting a unsym. **initiator RN:NLA**, ($R =$ a unit forming a **free radical** which does not **initiate polymn.**; $A =$ a unit reacting with a polymer core functional group; $L =$ a unit forming a **free radical moiety**) = (un)substituted C1-C10 linear or branched alkylene, C3-20 arylene, C4-20 alkyl-substituted arylene, C4-C20 alkylarylene; e.g., 4-[$($ triphenylmethyl)azobenzoic acid] with a polymer core having n functional groups (e.g., Starburst 1st Generation) reacting with the unsym. **initiator** to form a conjugate [RN:NLA'] n [Core] ($A' =$ linking unit to the polymer core); (b) adding to the conjugate .gtoreq.1 monomer (e.g., Bu acrylate) to form a reaction mixt.; and (c) **initiating polymn.** at 0-160.degree.. The **initiators** and processes are esp., useful for dendrimer or "star" polymers.

ST unsym **free radical initiator polymn**
IT Radical scavengers

(process for **polymn.** using unsym. **free-radical initiators** to control type and d.p.)
IT **Polymerization catalysts**
(radical, unsym.; process for **polymn.** using unsym. **free-radical initiators** to control type and d.p.)

IT **Polymerization**
(radical; process for **polymn.** using unsym. **free-radical initiators** to control type and d.p.)
IT 76-83-5, Triphenylmethylchloride 619-67-0, 4-Hydrazinobenzoic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(prepn. of unsym. **free-radical initiators**)
IT 142986-44-5DP, Starburst 1st Generation, reaction products with (triphenylmethyl)azobenzoic acid 158465-66-8DP, 3-Aminopropylmethylsilanediol-dimethylsilanediol copolymer, reaction products with (triphenylmethyl)azobenzoic acid 305802-34-0DP, reaction products with polymer core 305809-43-2P
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(process for **polymn.** using unsym. **free-radical initiators** to control type and d.p.)

IT 9003-49-0P, Butyl acrylate polymer 9003-53-6P, Polystyrene
9011-14-7P, Poly(methyl methacrylate)
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PREP (Preparation); USES (Uses)

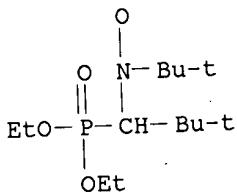
(process for **polymn.** using unsym. **free-radical initiators** to control type and d.p.)
IT 5873-93-8, Di(thiobenzoyl) disulfide 188526-94-5, N-tert-Butyl N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxyl radical
RL: MOA (Modifier or additive use); USES (Uses)
(radical scavenger; process for **polymn.** using unsym. **free-radical initiators** to control type and d.p.)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
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 (2) Macleay, R; US 4048423 A 1977 HCPLUS
 (3) Ravichandran, R; US 5021480 A 1991 HCPLUS
 (4) Tsubokawa, N; Journal of Polymer Science, Polymer Chemistry Edition V31(2),
 P563 HCPLUS

IT 188526-94-5, N-tert-Butyl N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxyl radical
 RL: MOA (Modifier or additive use); USES (Uses)
 (radical scavenger; process for polymn. using unsym.
 free-radical initiators to control type and
 d.p.)

RN 188526-94-5 HCPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)



L32 ANSWER 37 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 2000:758837 HCPLUS
 DN 134:42480
 TI Mechanistic aspects of nitroxide-mediated controlled radical polymerization of styrene in miniemulsion, using a water-soluble radical initiator
 AU Farcet, C.; Lansalot, M.; Charleux, B.; Pirri, R.; Vairon, J. P.
 CS Laboratoire de Chimie Macromoleculaire UMR 7610, Universite Pierre et Marie Curie, Paris, 75252, Fr.
 SO Macromolecules (2000), 33(23), 8559-8570
 CODEN: MAMOBX; ISSN: 0024-9297
 PB American Chemical Society
 DT Journal
 LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 AB Nitroxide-mediated controlled free-radical polymn. of styrene was studied in a miniemulsion system. The use of an acyclic .beta.-phosphonylated nitroxide enabled polymn. to be performed at a temp. below 100 .degree.C, typically 90 .degree.C. A bicomponent initiating system was chosen, i.e., a radical initiator in conjunction with added free nitroxide. This work focused on the mechanistic understanding of the polymn. The parameters that affect both the kinetics of polymn. and the control of the mol. wt. and mol. wt. distribution have been examd. and discussed, such as the nature and concn. of the pH buffer, the initiator concn., the monomer/water ratio, and the process for chain extension.
 ST nitroxide mediated miniemulsion radical polymn styrene
 IT Buffers
 (effect on nitroxide-mediated controlled radical polymn. of styrene in miniemulsion)
 IT Polymerization

(microemulsion, mechanism; nitroxide-mediated controlled miniemulsion radical polymn. of styrene)

IT Molecular weight
Molecular weight distribution
(of polystyrene; from nitroxide-mediated controlled radical polymn. in miniemulsion)

IT Polymerization catalysts
(radical; in nitroxide-mediated controlled miniemulsion radical polymn. of styrene)

IT Polymerization kinetics
(radical; of nitroxide-mediated controlled miniemulsion radical polymn. of styrene)

IT 144-55-8, Sodium bicarbonate, uses 584-08-7, Potassium carbonate
RL: NUU (Other use, unclassified); USES (Uses)
(buffer; in nitroxide-mediated controlled radical polymn. of styrene in miniemulsion)

IT 7647-14-5, Sodium chloride, uses
RL: NUU (Other use, unclassified); USES (Uses)
(effect on nitroxide-mediated controlled radical polymn. of styrene in miniemulsion)

IT 9003-53-6P, Polystyrene
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(from nitroxide-mediated controlled radical polymn. of styrene in miniemulsion)

IT 188526-94-5
RL: CAT (Catalyst use); USES (Uses)
(in nitroxide-mediated controlled radical polymn. of styrene in miniemulsion)

IT 7681-57-4, Sodium metabisulfite 7727-21-1, Potassium persulfate
RL: CAT (Catalyst use); USES (Uses)
(initiator; in nitroxide-mediated controlled radical polymn. of styrene in miniemulsion)

IT 100-42-5, Styrene, reactions.
RL: PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(nitroxide-mediated controlled radical polymn. in miniemulsion)

RE.CNT 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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- (3) Anon; private communication from Couturier, J L; Guerret, O
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- (15) Chong, Y; Macromolecules 1999, V32, P2071 HCPLUS
- (16) Corpart, P; WO 9858974 1997 HCPLUS
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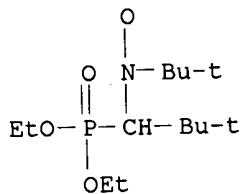
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 (23) Gaynor, S; Macromolecules 1998, V31, P5951 HCPLUS
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 (25) Gilbert, R; Emulsion Polymerization:a Mechanistic Approach 1995
 (26) Goto, A; Macromol Rapid Commun 1997, V18, P673 HCPLUS
 (27) Granel, C; Macromolecules 1996, V29, P8576 HCPLUS
 (28) Grimaldi, S; Polym Prepr (Am Chem Soc, Div Polym Chem) 1997, V38(1), P651
 HCPLUS
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 (35) Lansalot, M; Controlled/Living Radical Polymerization:Progress in ATRP,
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 P313 HCPLUS
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IT 188526-94-5

RL: CAT (Catalyst use); USES (Uses)
 (in nitroxide-mediated controlled radical polymn. of styrene in
 miniemulsion)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)



L32 ANSWER 38 OF 59 HCAPLUS COPYRIGHT 2003 ACS
AN 2000:756754 HCAPLUS
DN 133:322570
TI Method for the production of a controlled rheological propylene resin
IN Bertin, Denis; Robert, Patrice
PA Atofina, Fr.
SO PCT Int. Appl., 48 pp.
CODEN: PIXXD2
DT Patent
LA French
IC ICM C08F008-50
CC 37-3 (Plastics Manufacture and Processing)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000063260	A1	20001026	WO 2000-FR1026	20000419
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
FR	2792321	A1	20001020	FR 1999-4888	19990419
EP	1192192	A1	20020403	EP 2000-920844	20000419
EP	1192192	B1	20030326		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP	2002542346	T2	20021210	JP 2000-612345	20000419
AT	235521	E	20030415	AT 2000-920844	20000419
PRAI	FR 1999-4888	A	19990419		
	WO 2000-FR1026	W	20000419		
AB	The invention relates to a method for the prodn. of a controlled rheol. homopolymer or copolymer of propylene or a compn. comprising a homopolymer or copolymer of propylene in the absence of a functional monomer. The inventive method increases the melt flow index of the resin by cutting the chains using a polynn. initiator and is characterized in that at least one stable free radical is incorporated into the resin in a viscous state, whereupon a solid product is formed having an increased melt flow index. The stable free radical or radicals are more particularly chosen from nitroxyl radicals, contg. at least one group :NO.bul..				
ST	melt flow enhancement propylene polymer; polynn initiator degrdn propylene polymer; nitroxyl incorporation propylene polymer				
IT	Polymer degradation				

Polymerization catalysts

(manuf. of propylene polymers with increased melt flow by degrdn. with polymn. catalysts and incorporation of nitroxyl radicals)

IT Nitroxides

RL: MOA (Modifier or additive use); USES (Uses)

(manuf. of propylene polymers with increased melt flow by degrdn. with polymn. catalysts and incorporation of nitroxyl radicals)

IT 2154-68-9, 3-Carboxy-2,2,5,5-tetramethylpyrrolidinyloxy 2226-96-2,
 TEMPOL 2516-92-9, Bis(1-oxyl-2,2,6,6-tetramethylpiperidin-4-yl) sebacate
 2525-39-5, 2,4,6-Tri-tert-butylphenoxy 2564-83-2, TEMPO 2896-70-0,
 4-Oxo-2,2,6,6-tetramethyl-1-piperidinyloxy 3229-53-6, 2,2,5,5
 Tetramethyl-1-pyrrolidinyloxy 61015-94-9, N-tert-Butyl-1-phenyl-2-methyl
 propyl nitroxide 95407-69-5, 4-Methoxy-2,2,6,6-tetramethyl-1-
 piperidinyloxy **188526-94-5**, N-tert-Butyl-1-diethylphosphono-2,2-
 dimethylpropyl nitroxide **188707-72-4**, N-tert-Butyl-1-
 dibenzylphosphono-2,2-dimethyl propyl nitroxide 200345-02-4,
 N-tert-Butyl-1-(2-naphthyl)-2-methyl propyl nitroxide **200345-03-5**
 , N-Phenyl-1-diethylphosphono-2,2-dimethyl propyl nitroxide 200345-04-6,
 N-Phenyl-1-diethylphosphono-1-methyl ethyl nitroxide **200345-05-7**
 , N-(1-Phenyl 2-methyl propyl)-1-diethylphosphono-1-methyl ethyl nitroxide
258354-63-1, N-tert-Butyl-[(1-diethylphosphono)-2-methylpropyl]
 nitroxide **261527-17-7**, N-tert-Butyl-1-di(2,2,2-
 trifluoroethyl)phosphono-2,2-dimethyl propyl nitroxide **263355-91-5**
302906-69-0, N-(1-Phenylbenzyl)-[(1-diethylphosphono)-1-methyl
 ethyl] nitroxide

RL: MOA (Modifier or additive use); USES (Uses)

(manuf. of propylene polymers with increased melt flow by degrdn. with polymn. catalysts and incorporation of nitroxyl radicals)

IT 9003-07-0, Polypropylene 106565-43-9, Ethylene-propylene block copolymer
 RL: PEP (Physical, engineering or chemical process); POF (Polymer in
 formulation); PRP (Properties); PROC (Process); USES (Uses)

(manuf. of propylene polymers with increased melt flow by degrdn. with polymn. catalysts and incorporation of nitroxyl radicals)

IT 75-91-2, tert-Butyl hydroperoxide 78-63-7, 2,5-Bis(tert-butylperoxy)-2,5-
 dimethylhexane 78-67-1, 2,2'-Azobis(isobutyronitrile) 80-15-9, Cumyl
 hydroperoxide 80-47-7, p-Menthane hydroperoxide 94-36-0, Benzoyl
 peroxide, reactions 105-74-8, Lauroyl peroxide 107-71-1, tert-Butyl
 peroxyacetate 109-13-7, tert-Butyl peroxyisobutyrate 110-05-4,
 Di-tert-butyl peroxide 614-45-9, tert-Butyl peroxybenzoate 686-31-7,
 tert-Amyl peroxy-2-ethylhexanoate 762-12-9, Decanoyl peroxide
 927-07-1, tert-Butyl peroxyvalerate 995-33-5, Butyl 4,4-di(tert-
 butylperoxy)valerate 1068-27-5, 2,5-Dimethyl-2,5-di(tert-butylperoxy)-3-
 butylperoxy)valene 1561-49-5, Dicyclohexyl peroxydicarbonate 1931-62-0, tert-Butyl
 hexyne 2167-23-9, 2,2-Di(tert-butylperoxy)butane 2212-81-9
 peroxymaleate 2372-21-6, OO-tert-butyl-O-isopropylmonoperoxy carbonate 2618-77-1,
 2,5-Dimethyl-2,5-di(benzoylperoxy)hexane 3006-86-8, 1,1-Di(tert-butylperoxy)cyclohexane
 peroxy-2-ethylhexanoate 3025-88-5, 2,5-Dimethyl-2,5-di(hydroperoxy)hexane 3088-74-2,
 2,2-Bis(4,4-di-tert-butylperoxycyclohexyl)propane 3179-56-4, Acetyl
 cyclohexylsulfonyl peroxide 3425-61-4, tert-Amyl hydroperoxide
 3457-61-2, tert-Butyl cumyl peroxide 3851-87-4, 3,5,5-Trimethylhexanoyl
 peroxide 4419-11-8, 2,2'-Azobis(2,4-dimethylvaleronitrile) 6731-36-8,
 1,1-Di(tert-butylperoxy)-3,3,5-trimethylcyclohexane 10508-09-5,
 Di-tert-amyl peroxide 13052-09-0 13122-18-4, tert-Butyl
 peroxy-3,5,5-trimethylhexanoate 13472-08-7, 2,2'-Azobis(2-
 methylbutyronitrile) 15545-97-8, 2,2'-Azobis(2,4-dimethyl-4-
 methoxyvaleronitrile) 15667-10-4, 1,1-Di(tert-amylperoxy)cyclohexane
 16111-62-9, Di(2-ethylhexyl) peroxydicarbonate 22397-33-7,

3,3,6,6,9,9-Hexamethyl-1,2,4,5-tetraoxacyclononane 25251-51-8,
 3-Phenyl-3-tert-butylperoxyphthalide 26637-80-9, Diisopropylbenzene
 monohydroperoxide 26748-41-4, tert-Butyl peroxyneodecanoate
 26748-47-0, .alpha.-Cumyl peroxyneodecanoate 27836-52-8, tert-Butyl
 peroxyisononanoate 29240-17-3, tert-Amyl peroxypropionate 34443-12-4,
 OO-tert-butyl-O-(2-ethylhexyl)monoperoxy carbonate 40888-97-9,
 2,2'-Azobis(2-acetoxypropane) 51241-23-7, 2,2'-
 Azobis(cyclohexanenitrile) 55794-20-2, Ethyl 3,3-di(tert-
 butylperoxy)butyrate 67567-23-1, Ethyl 3,3-di(tert-amylperoxy)butyrate
 68299-16-1, tert-Amyl peroxyneodecanoate 68860-54-8, tert-Amyl
 peroxy-3,5,5-trimethylhexanoate 70833-40-8, OO-tert-amyl-O-(2-
 ethylhexyl)monoperoxy carbonate 95718-78-8, 3-Hydroxy-1,1-dimethylbutyl
 peroxyneodecanoate

RL: RCT (Reactant); RACT (Reactant or reagent)
 (manuf. of propylene polymers with increased melt flow by degrdn. with
 polymn. catalysts and incorporation of nitroxyl radicals)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

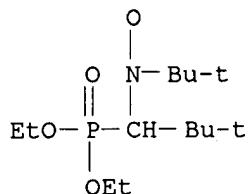
- (1) Ciba Specialty Chemicals Holding Inc; WO 9749737 A 1997 HCPLUS
- (2) Elf Atochem S A; EP 0837080 A 1998 HCPLUS
- (3) Esso Research And Engineering Company; FR 2132780 A 1972 HCPLUS
- (4) Kayaku Noury Corporation; EP 0264156 A 1988 HCPLUS
- (5) Lentia GmbH Chem Und Pharm Erzeugnisse; DE 1694563 A 1970 HCPLUS
- (6) Pcd-Polymere GmbH; EP 0632062 A 1995 HCPLUS
- (7) Scott, G; WO 8501508 A 1985 HCPLUS
- (8) Witco Corporation; EP 0853090 A 1998 HCPLUS

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl
 nitroxide 188707-72-4, N-tert-Butyl-1-dibenzylphosphono-2,2-
 dimethyl propyl nitroxide 200345-03-5, N-Phenyl-1-
 diethylphosphono-2,2-dimethyl propyl nitroxide 200345-05-7,
 N-(1-Phenyl 2-methyl propyl)-1-diethylphosphono-1-methyl ethyl nitroxide
 258354-63-1, N-tert-Butyl-[(1-diethylphosphono)-2-methylpropyl]
 nitroxide 261527-17-7, N-tert-Butyl-1-di(2,2,2-
 trifluoroethyl)phosphono-2,2-dimethyl propyl nitroxide 263355-91-5
 302906-69-0, N-(1-Phenylbenzyl)-[(1-diethylphosphono)-1-methyl
 ethyl] nitroxide

RL: MOA (Modifier or additive use); USES (Uses)
 (manuf. of propylene polymers with increased melt flow by degrdn. with
 polymn. catalysts and incorporation of nitroxyl radicals)

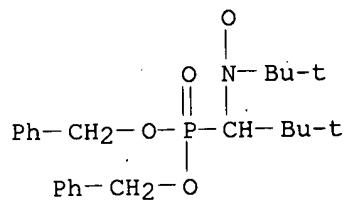
RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)

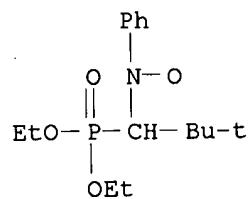


RN 188707-72-4 HCPLUS

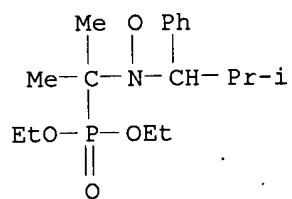
CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl
 1,1-dimethylethyl (9CI) (CA INDEX NAME)



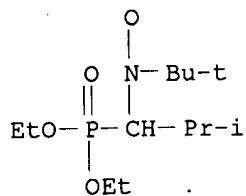
RN 200345-03-5 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl phenyl (9CI) (CA INDEX NAME)



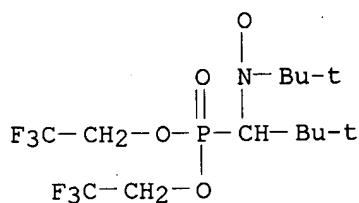
RN 200345-05-7 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-1-methylethyl 2-methyl-1-phenylpropyl (9CI) (CA INDEX NAME)



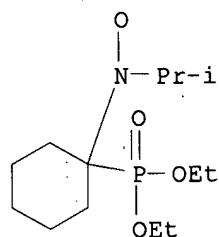
RN 258354-63-1 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2-methylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



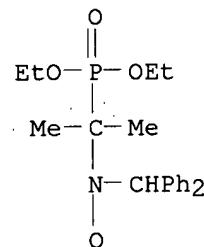
RN 261527-17-7 HCAPLUS
 CN Nitroxide, 1-[bis(2,2,2-trifluoroethoxy)phosphinyl]-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



RN 263355-91-5 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)cyclohexyl 1-methylethyl (9CI) (CA INDEX NAME)



RN 302906-69-0 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-1-methylethyl diphenylmethyl (9CI) (CA INDEX NAME)



L32 ANSWER 39 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:646046 HCAPLUS
 DN 133:238503
 TI Controlled **free radical** emulsion and water-based polymerizations and seeded methodologies
 IN Klaerner, Gerrit; Safir, Adam; Nielsen, Ralph B.; Jandeleit, Bernd;
 Huefner, Peter; Li, Yunxiao
 PA Symyx Technologies, Inc., USA
 SO PCT Int. Appl., 139 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C08F002-22
 ICS C08F002-38
 CC 35-4 (Chemistry of Synthetic High Polymers)
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000053640	A1	20000914	WO 2000-US6176	20000308
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 2002010267	A1	20020124	US 1999-347607	19990702
	US 2002061988	A1	20020523	US 1999-347609	19990702
	US 6472486	B2	20021029		
	AU 2000037338	A5	20000928	AU 2000-37338	20000308
	EP 1165625	A1	20020102	EP 2000-916194	20000308
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 2002001845	A1	20020103	US 2001-911683	20010724
PRAI	US 1999-123498P	P	19990309		
	US 1999-347606	A	19990702		
	US 1999-347607	A	19990702		
	US 1999-347608	A	19990702		
	US 1999-347609	A	19990702		
	US 1999-146936P	P	19990731		
	US 2000-177879P	P	20000124		
	WO 2000-US6176	W	20000308		
	US 2000-609461	A3	20000703		
AB	Nitroxides having an alpha-carbon atom with a destabilizing moiety are effective control agents for emulsion and water-based polymers, including the formation of block copolymers from a wide range of monomers. The nitroxide radicals may be used as a free radical or as an adduct with a residue from the initiator. The emulsions have living characteristics, including the re-initiation of polymer chains. Also, a seeded process for emulsions, which includes the step-wise addn. of monomer is disclosed, providing access to a wide range of initiator types.				
ST	radical emulsion polymer nitroxide control agent				
IT	Nitroxides				
	RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)				
	(controlled free radical emulsion and water-based polymers. and seeded methodologies)				
IT	Thermoplastic rubber				
	RL: IMF (Industrial manufacture); PREP (Preparation)				
	(controlled free radical emulsion and water-based polymers. and seeded methodologies)				
IT	Polymerization				
	(emulsion, radical ; controlled free radical emulsion and water-based polymers. and seeded methodologies)				
IT	Emulsions				
	(polymer; controlled free radical emulsion and water-based polymers. and seeded methodologies)				
IT	9003-53-6P, Styrene homopolymer 25085-34-1P, Acrylic acid styrene copolymer 28445-37-6P 31619-79-1P, Styrene 4-styrenesulfonic acid sodium salt copolymer 61015-94-9P 76790-28-8P 89933-24-4P 107391-68-4P, Butylmethacrylate Styrene block copolymer 110772-34-4P, Butyl acrylate Styrene block copolymer 131830-42-7P, Acrylic acid				

butylacrylate styrene block copolymer 293328-07-1P 293328-08-2P
 293328-10-6P 293328-18-4P **293328-19-5P** 293328-20-8P
293328-21-9P 293328-22-0P 293328-23-1P 293328-27-5P
 293328-28-6P, 2-Acrylamido-2-methylpropanesulfonic acid-tert-
 butylacrylamide-styrene copolymer 293328-29-7P, 2-Acrylamido-2-
 methylpropanesulfonic acid-butyl acrylate-tert-butylacrylamide copolymer
 293328-31-1P 293328-32-2P
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (controlled free radical emulsion and water-based polymns. and seeded
 methodologies)

IT 72877-60-2P
 RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP
 (Preparation); USES (Uses)
 (controlled free radical emulsion and water-based polymns. and seeded
 methodologies)

IT 10250-27-8P 179419-05-7P 227000-85-3P 270901-81-0P 293328-09-3P
 293328-11-7P **293328-12-8P** 293328-13-9P 293328-14-0P
 293328-15-1P 293328-16-2P 293328-17-3P 293328-26-4P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (controlled free radical emulsion and water-based polymns. and seeded
 methodologies)

IT 78-67-1 98-88-4, Benzoylchloride 100-42-5, reactions 100-43-6,
 4-Vinylpyridine 124-68-5 500-22-1, Pyridine-3-carboxaldehyde
 1068-55-9, Isopropylmagnesium chloride 1112-56-7, Tetravinyltin
 1122-91-4, 4-Bromobenzaldehyde 2039-82-9 2633-67-2 3317-61-1,
 5,5-Dimethyl-.DELTA.1-pyrroline N-oxide 3376-24-7, N-tert-Butyl-.alpha.-
 phenylnitrone 6921-35-3, 3,3-Dimethyloxetane 7677-24-9,
 Trimethylsilylcyanide 30030-25-2 51760-21-5, Dimethyl
 5-bromoisophthalate 57497-39-9, N-tert-Butylhydroxylamine hydrochloride
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (controlled free radical emulsion and water-based polymns. and seeded
 methodologies)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

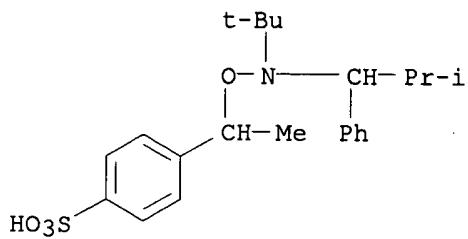
RE

- (1) Finet, J; WO 9624620 A 1996 HCPLUS
- (2) Lansalot, M; DATABASE COMPENDEX
- (3) Lansalot, M; PROCEEDINGS OF THE AMERICAN CHEMICAL SOCIETY 'POLYMER
PREPRINTS' 1999, V40(2), P317 HCPLUS
- (4) Marestin, C; DATABASE COMPENDEX
- (5) Marestin, C; MACROMOLECULES 1998, V31(12), P4041 HCPLUS
- (6) Moad, G; WO 9830601 A 1998 HCPLUS
- (7) Morrison, B; WO 9900426 A 1999 HCPLUS

IT **293328-19-5P 293328-21-9P**
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (controlled free radical emulsion and water-based polymns. and seeded
 methodologies)

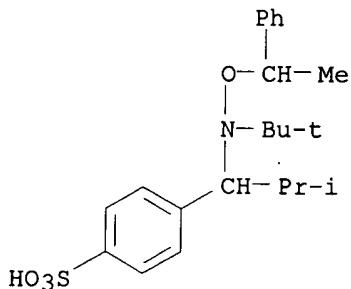
RN 293328-19-5 HCPLUS

CN Benzenesulfonic acid, 4-[1-[[[(1,1-dimethylethyl)(2-methyl-1-
phenylpropyl)amino]oxy]ethyl]-, sodium salt (9CI) (CA INDEX NAME)



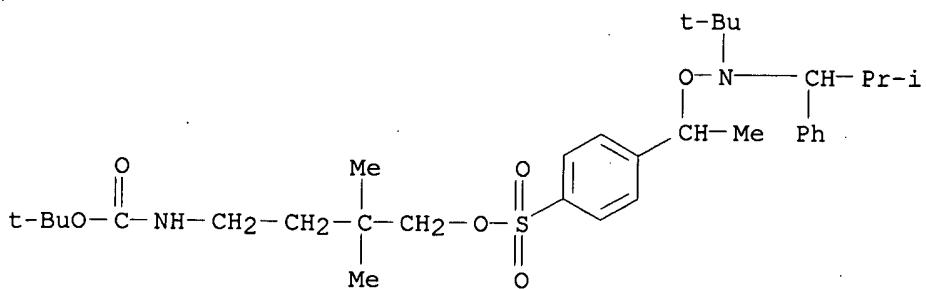
● Na

RN 293328-21-9 HCPLUS
 CN Benzenesulfonic acid, 4-[1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2-methylpropyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IT 293328-12-8P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (controlled free radical emulsion and water-based polymers. and seeded methodologies)
 RN 293328-12-8 HCPLUS
 CN Benzenesulfonic acid, 4-[1-[(1,1-dimethylethyl)(2-methyl-1-phenylpropyl)amino]oxyethyl]-, 4-[(1,1-dimethylethoxy)carbonyl]amino]-2,2-dimethylbutyl ester (9CI) (CA INDEX NAME)



L32 ANSWER 40 OF 59 HCPLUS COPYRIGHT 2003 ACS
AN 2000:610046 HCPLUS
DN 133:322182
TI Synthesis of polystyrene-**polyacrylate** block copolymers by nitroxide-mediated radical **polymerization**
.AU Robin, Sophie; Ghanou, Yves
CS Laboratoire de Chimie des Polymères Organiques, ENSCPB-CNRS-Université Bourdeau 1, Talence, 33402, Fr.
SO ACS Symposium Series (2000), 768(Controlled/Living Radical Polymerization), 334-346
CODEN: ACSMC8; ISSN: 0097-6156
PB American Chemical Society
DT Journal
LA English
CC 35-3 (Chemistry of Synthetic High Polymers)
AB This paper discusses the conditions the best suited to the prepn. of well defined polystyrene (PS)/poly(Bu acrylate) (PBuA), using the .beta.-hydrogen-contg. phosphonylated nitroxide N-tert-butyl-N-[1-(di-Et phosphono)-2,2-dimethylpropyl]nitroxyl. Using kinetic data to compute the rates of cross-addn. and propagation of the second monomer, it is demonstrated that **polymg.** Bu acrylate (BuA) before styrene should give rise to well defined PBuA-b-PS copolymer samples. This prediction was exptl. confirmed subsequently. When styrene was **polymd.** first, the copolymer formed was contaminated with a substantial amt. of residual PS macroinitiator: the difference between the rates of cross-addn. and propagation of BuA resulted in a fast growth of those of the PBuA blocks that were **initiated**, causing the medium to partition in mesophases with the residual PS precursor entrapped in the monomer-poor phase.
ST styrene butyl acrylate block **polymn** kinetics;
IT nitroxide mediated radical block **polymn**
IT **Polymerization**
(block, radical, mechanism; styrene-Bu acrylate block copolymn. by nitroxide-mediated radical **polymn.**)
IT **Polymerization catalysts**
(block, radical; styrene-Bu acrylate block copolymn. by nitroxide-mediated radical **polymn.**)
IT **Polymerization kinetics**
(block; of styrene-Bu acrylate block copolymn. by nitroxide-mediated radical **polymn.**)
IT **Polymerization kinetics**
(radical; of styrene-Bu acrylate block copolymn. by nitroxide-mediated radical **polymn.**)
IT 78-67-1, AIBN
RL: CAT (Catalyst use); USES (Uses)
(cocatalyst; in prepn. of styrene-Bu acrylate block copolymers by nitroxide-mediated radical **polymn.**)
IT 110772-34-4P, Butyl acrylate-styrene block copolymer
RL: SPN (Synthetic preparation); PREP (Preparation)
(diblock; prepn. of styrene-Bu acrylate block copolymers by nitroxide-mediated radical **polymn.**)
IT 188526-94-5
RL: CAT (Catalyst use); USES (Uses)
(in prepn. of styrene-Bu acrylate block copolymers by nitroxide-mediated radical **polymn.**)
IT 100-42-5, Styrene, reactions 141-32-2, Butyl acrylate

RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (kinetics of styrene-Bu acrylate block copolymer by
 nitroxide-mediated radical polymn.)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE

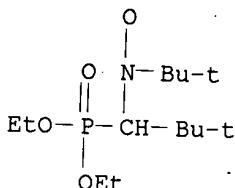
- (1) Baldovi, M; Macromolecules 1996, V29, P5497 HCPLUS
- (2) Benoit, D; Controlled Radical Polymerization, ACS Symposium Series 685, Chapter 14 1998
- (3) Benoit, D; J Am Chem Soc 1999, V16(121), P3904
- (4) Benoit, D; J Am Chem Soc, submitted
- (5) Benoit, D; Macromolecules 2000, V33, P363 HCPLUS
- (6) Benoit, D; Ph D Thesis, Bordeaux-I University 1997
- (7) Buback, M; Macromol Chem Phys 1995, V196, P3267 HCPLUS
- (8) Fisher, H; J Polym Sci, Part A: Polym Chem 1999, V37, P1885
- (9) Georges, M; Macromolecules 1994, V27, P7228 HCPLUS
- (10) Georges, M; Polymer Prepr (Am Chem Soc, Div Polym Chem) 1994, V35, P870 HCPLUS
- (11) Grimaldi, S; Macromolecules, to be published 2000
- (12) Leibler, L; Macromolecules 1980, V13, P1602 HCPLUS
- (13) Lyons, R; Macromolecules 1996, V29, P1918 HCPLUS
- (14) Odell, P; Macromolecules 1995, V28, P8453 HCPLUS
- (15) Robin, S; Polym Prepr 1999, V40(2), P387 HCPLUS
- (16) Shipp, D; Macromolecules 1999, V32, P2948 HCPLUS
- (17) Veregin, R; Macromolecules 1996, V29, P4161 HCPLUS

IT 188526-94-5

RL: CAT (Catalyst use); USES (Uses)
 (in prepn. of styrene-Bu acrylate block copolymers by
 nitroxide-mediated radical polymn.)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)



L32 ANSWER 41 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2000:593981 HCPLUS

DN 133:297016

TI Macromolecular engineering using novel alkoxyamines

AU Granou, Yves; Robin, Sophie; Guerrier, O.; Couturier, J. L.

CS Laboratoire de Chimie des Polymères Organiques, ENSCPB-CNRS-Université
 Bordeaux 1 (UMR 5629), Talence, 33402, Fr.

SO Polymer Preprints (American Chemical Society, Division of Polymer
 Chemistry) (2000), 41(2), 1352-1353
 CODEN: ACPPAY; ISSN: 0032-3934

PB American Chemical Society, Division of Polymer Chemistry
 DT Journal

LA English

CC 37-3 (Plastics Manufacture and Processing)

AB Mono, di, and trifunctional alkoxyamines based on N-tert-butyl-N-(1-

diethylphosphono-2,2-dimethyl)propyl nitroxide were used to polymerize styrene and Bu acrylate, affording well-defined linear and star structures. Triblock as well as star block copolymers constituted of poly(Bu acrylate) inner part and polystyrene outer shell were subsequently synthesized by sequentially polymn. of these two monomers, using dialkoxyamine and trialkoxyamine as initiators.

ST alkoxyamine polymn catalyst styrene butyl acrylate; triblock copolymer styrene butyl acrylate prep; starblock copolymer styrene butyl acrylate prep; polystyrene prep catalyst alkoxyamine; polyacrylate prep catalyst alkoxyamine

IT Polymerization catalysts (polymn. of styrene and Bu acrylate in presence of alkoxyamine catalysts)

IT 300811-93-2 300811-94-3 300811-95-4
RL: CAT (Catalyst use); USES (Uses)
(catalysts; polymn. of styrene and Bu acrylate in presence of alkoxyamine catalysts)

IT 9003-49-0P, Poly(butyl acrylate)
RL: SPN (Synthetic preparation); PREP (Preparation)
(prep. of linear and star-shaped poly(Bu acrylate) in presence of alkoxyamine catalysts)

IT 9003-53-6P, Polystyrene
RL: SPN (Synthetic preparation); PREP (Preparation)
(prep. of linear and star-shaped polystyrene in presence of alkoxyamine catalysts)

IT 110772-34-4P, Butyl acrylate-styrene block copolymer
RL: SPN (Synthetic preparation); PREP (Preparation)
(starblock and triblock; prep. in presence of alkoxyamine catalysts)

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD

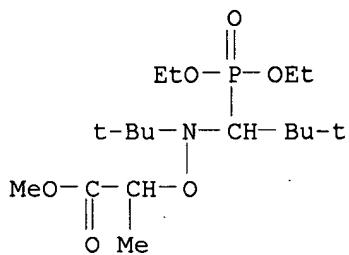
RE

- (1) Angot, S; Polym Prepr 1999, V40(2), P348 HCPLUS
- (2) Benoit, D; ACS Symposium series 1998, 685
- (3) Benoit, D; J Am Chem Soc 1999, V121, P3409
- (4) Benoit, D; PhD thesis, Universite Bordeaux I 1997
- (5) Benoit, D; Polym Prepr 1997, V38(1), P729 HCPLUS
- (6) Dao, J; J Polym Sci Part A : Polym Chem 1998, V36, P2162
- (7) Finney, S; Angew Chem Int Engl 1997, V36, P1720
- (8) Grimaldi, S; Polym Prepr 1997, V38(1), P651 HCPLUS
- (9) Guerret, O; paper to publish
- (10) Hawker, C; Macromolecules 1995, V28, P2993 HCPLUS
- (11) Hawker, C; Polym Prepr 1999, V40(2), P315 HCPLUS
- (12) Hawker, J; Macromolecules 1996, V29, P5245
- (13) Le Mercier, C; Polym Prepr 1999, V40(2), P313 HCPLUS
- (14) Leduc, R; J Am Chem Soc 1996, V118, P11111
- (15) Lutz, J; Polym Prepr 1999, V40(2), P319 HCPLUS
- (16) Matyjaszewski, K; Macromolecules 1998, V31, P5995
- (17) Matyjaszewski, K; Macromolecules 1999, V32, P6526 HCPLUS
- (18) Miura, Y; Macromolecules 1998, V31, P4659 HCPLUS
- (19) Ohno, K; Macromolecules 1997, V30, P2503 HCPLUS
- (20) Robin, S; Polym Prepr 1999, V40(2), P387 HCPLUS

IT 300811-93-2 300811-94-3
RL: CAT (Catalyst use); USES (Uses)
(catalysts; polymn. of styrene and Bu acrylate in presence of alkoxyamine catalysts)

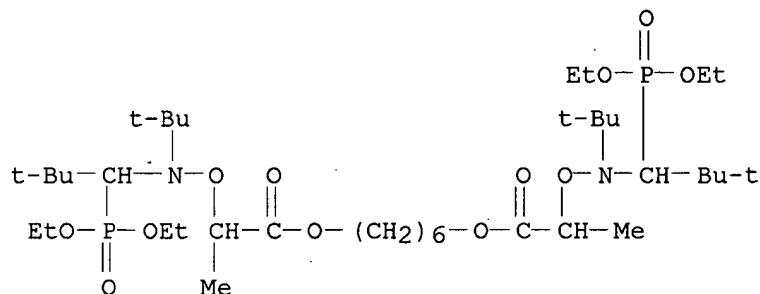
RN 300811-93-2 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide (9CI) (CA INDEX NAME)



RN 300811-94-3 HCAPLUS

CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, 1,6-hexanediyl ester, 6,6'-dioxide (9CI) (CA INDEX NAME)



L32 ANSWER 42 OF 59 HCAPLUS COPYRIGHT 2003 ACS

AN 2000:592727 HCAPLUS

DN 133:177640

TI Alkoxyamines derived from phosphorus-containing nitroxides and their use
IN Couturier, Jean-Luc; Henriet-Bernard, Christiane; Le Mercier, Christophe;
Tordo, Paul; Lutz, Jean-Francois

PA Elf Atochem S.A., Fr.

SO PCT Int. Appl., 27 pp.

CODEN: PIXXD2

DT Patent

LA French

IC ICM C07F009-40

ICS C08F004-00

CC 35-3 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 29

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000049027	A1	20000824	WO 2000-FR335	20000210
	W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM		RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,

DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,
 CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
 FR 2789991 A1 20000825 FR 1999-1998 19990218
 FR 2789991 B1 20020222
 EP 1153030 A1 20011114 EP 2000-903787 20000210
 EP 1153030 B1 20020911
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO
 AT 223922 E 20020915 AT 2000-903787 20000210
 JP 2002537304 T2 20021105 JP 2000-599765 20000210
 ES 2182777 T3 20030316 ES 2000-903787 20000210
 US 6569967 B1 20030527 US 2002-913940 20020319
 PRAI FR 1999-1998 A 19990218
 WO 2000-FR335 W 20000210
 OS MARPAT 133:177640
 AB R4R5P(:O)CR1R2NR3OZ [R1, R2 = C1-10 alkyl, aryl, C.ltoreq.10 aralkyl; R1R2
 = C2-7 hydrocarbylene; R3 = C1-30 hydrocarbyl; R4, R5 = C.ltoreq.20
 cycloalkyl, C.ltoreq.20 aryl, C.ltoreq.20 alkoxy, C.ltoreq.20 aryloxy,
 C.ltoreq.20 aralkoxy, C.ltoreq.20 perfluoroalkyl, C.ltoreq.20 aralkyl,
 C.ltoreq.20 thioalkyl; R4R5 = C2-6 hydrocarbylene, optionally, contg.
 .gtoreq.1 of O or S; Z = CF₃(CF₂)₅, Me₂C(CN), or CR₆R₇R₇; R₆, R₇ = H,
 CN, C₃-12 cycloalkyl, (CH₂)_nCO₂R₉; R₉ = C₁-6 alkyl; n = 0-6] are useful
 for initiators in radical polymn. A typical compd. was manufd. by
 reaction of 4 mmol PhCHMeBr 48 h with 2 mmol (EtO)₂P(:O)CH(CMe₃)N(CMe₃)O.b
 ul. in PhMe in the presence of CuBr and 2,2'-bipyridine.
 ST phosphorus contg nitroxide based alkoxyamine initiator radical polymn;
 tertiary butyldiethyl phosphonodimethylpropyl phenylethylhydroxyamine
 manuf initiator radical polymn
 IT Amines, preparation
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);
 USES (Uses)
 (alkoxy-; alkoxyamines derived from phosphorus-contg. nitroxides for
 initiators for radical polymn.)
 IT Polymerization catalysts
 (radical; alkoxyamines derived from phosphorus-contg. nitroxides for
 initiators for radical polymn.)
 IT 224575-61-5P 288583-05-1P 288583-07-3P
 288583-08-4P 288583-09-5P 288583-10-8P
 288583-75-5P 288583-76-6P 288583-77-7P
 288583-78-8P
 RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);
 USES (Uses)
 (alkoxyamines derived from phosphorus-contg. nitroxides for
 initiators for radical polymn.)
 IT 9003-53-6P, Polystyrene
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (alkoxyamines derived from phosphorus-contg. nitroxides for initiators
 for radical polymn.)
 IT 188526-94-5P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (precursor; alkoxyamines derived from phosphorus-contg. nitroxides for
 initiators for radical polymn.)
 IT 100-39-0, Benzyl bromide 355-43-1, Perfluorohexyl iodide 585-71-7,
 (1-Bromoethyl)benzene 931-50-0, Cyclohexylmagnesium bromide 5445-17-0,
 Methyl 2-bromopropionate 21369-64-2, Hexyllithium 23426-63-3, Methyl
 2-bromo-2-methylpropionate 41658-69-9, 2-Bromo-2-methylpropionitrile
 227000-10-4, Diethyl 2,2-dimethyl-1-(1,1-dimethylethylamino)propanephospho

nate

RL: RCT (Reactant); RACT (Reactant or reagent)
 (precursor; alkoxyamines derived from phosphorus-contg. nitroxides for
 initiators for radical polymn.)

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE

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- (2) Benoit, D; J AM CHEM SOC (JACSAT, 00027863) 1999, V121(16), P3904 HCPLUS
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- (10) Shatzmiller, S; JUSTUS LIEBIGS ANNALEN DER CHEMIE 1991, 2, P161 HCPLUS
- (11) Shatzmiller, S; JUSTUS LIEBIGS ANNALEN DER CHEMIE 1993, 9, P955 HCPLUS
- (12) Shatzmiller, S; JUSTUS LIEBIGS ANNALEN DER CHEMIE 1993, 9, P955 HCPLUS
- (13) Stephen, D; US 5077329 A 1991 HCPLUS
- (14) Stephen, D; US 5077329 A 1991 HCPLUS

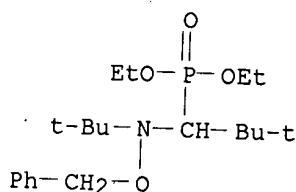
IT 224575-61-5P 288583-05-1P 288583-07-3P
 288583-08-4P 288583-09-5P 288583-10-8P
 288583-75-5P 288583-76-6P 288583-77-7P
 288583-78-8P

RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation);
 USES (Uses)

(alkoxyamines derived from phosphorus-contg. nitroxides for
 initiators for radical polymn.)

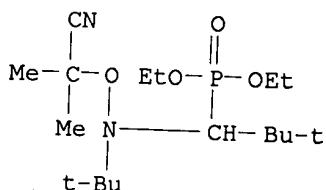
RN 224575-61-5 HCPLUS

CN Phosphonic acid, [1-[(1,1-dimethylethyl)(phenylmethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)

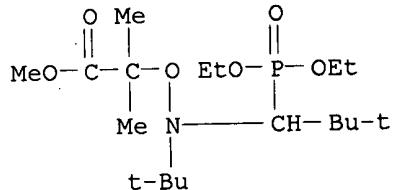


RN 288583-05-1 HCPLUS

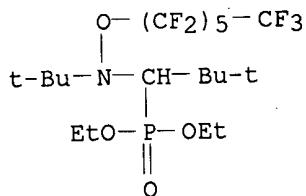
CN Phosphonic acid, [1-[(1-cyano-1-methylethoxy)(1,1-dimethylethyl)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



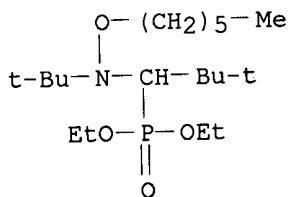
RN 288583-07-3 HCPLUS
 CN 3,7-Dioxa-4-aza-6-phosphonanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2,2-dimethyl-, methyl ester, 6-oxide (9CI) (CA INDEX NAME)



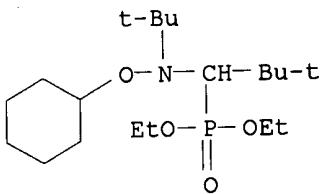
RN 288583-08-4 HCPLUS
 CN Phosphonic acid, [1-[(1,1-dimethylethyl)[(tridecafluorohexyl)oxy]amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



RN 288583-09-5 HCPLUS
 CN Phosphonic acid, [1-[(1,1-dimethylethyl)(hexyloxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



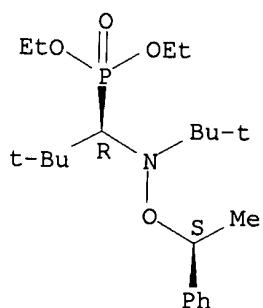
RN 288583-10-8 HCPLUS
 CN Phosphonic acid, [1-[(cyclohexyloxy)(1,1-dimethylethyl)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



RN 288583-75-5 HCPLUS
 CN Phosphonic acid, [(1R)-1-[(1,1-dimethylethyl)[(1S)-1-phenylethoxy]amino]-

2,2-dimethylpropyl]-, diethyl ester, rel- (9CI) (CA INDEX NAME)

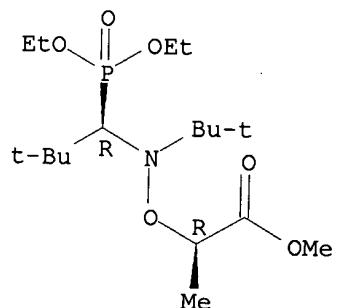
Relative stereochemistry.



RN 288583-76-6 HCPLUS

CN 3,7-Dioxa-4-aza-6-phosphononanoic acid, 4,5-bis(1,1-dimethylethyl)-6-ethoxy-2-methyl-, methyl ester, 6-oxide, (2R,5R)-rel- (9CI) (CA INDEX NAME)

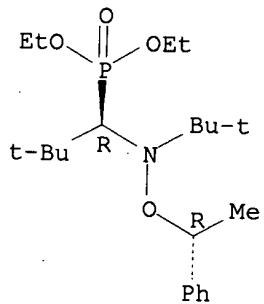
Relative stereochemistry.



RN 288583-77-7 HCPLUS

CN Phosphonic acid, [(1R)-1-[(1,1-dimethylethyl)[(1R)-1-phenylethoxy]amino]-2,2-dimethylpropyl]-, diethyl ester, rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.

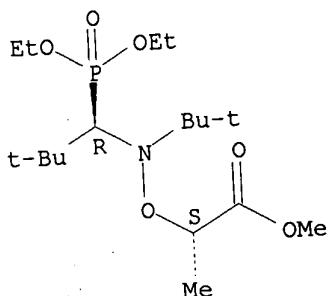


RN 288583-78-8 HCPLUS

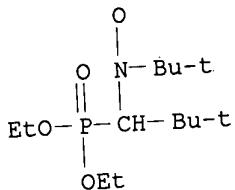
CN 3,7-Dioxa-4-aza-6-phosphononanoic acid, 4,5-bis(1,1-dimethylethyl)-6-

ethoxy-2-methyl-, methyl ester, 6-oxide, (2R,5S)-rel- (9CI) (CA INDEX
NAME)

Relative stereochemistry.



IT 188526-94-5P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
 (Reactant or reagent)
 (precursor; alkoxyamines derived from phosphorus-contg. nitroxides for
 initiators for radical polymn.)
 RN 188526-94-5 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)



L32 ANSWER 43 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:382170 HCAPLUS

DN 133:120724
 TI Kinetics and Mechanism of Controlled Free-Radical
 Polymerization of Styrene and n-Butyl Acrylate in the
 Presence of an Acyclic .beta.-Phosphonylated Nitroxide
 AU Benoit, Didier; Grimaldi, Sandra; Robin, Sophie; Finet, Jean-Pierre;
 Tordo, Paul; Gnanou, Yves
 CS Laboratoire de Chimie des Polymeres Organiques, ENSCPB - Universite
 Bordeaux I, Talence, 33402, Fr.
 SO Journal of the American Chemical Society (2000), 122(25), 5929-5939
 CODEN: JACSAT; ISSN: 0002-7863
 PB American Chemical Society
 DT Journal
 LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 AB This study investigates the kinetics of free radical
 polymer. of styrene and Bu acrylate carried out in the
 presence of N-tert-butyl-N-[1-diethylphosphono-(2,2-dimethylpropyl)]
 nitroxide (DEPN). With this stable radical as chain growth moderator, it

is demonstrated that the **polymn.** of these two monomers exhibits a controlled character. The mechanism of **polymn.** is essentially the same as that described for other "living"/controlled radical polymns.: the chains form a large pool of dormant species that can be reversibly activated, and only a minute fraction of them propagate at a given time. Using dilatometry and ESR, the evolution of the concn. of **polymeric** radicals and that of DEPN could be measured as a function of time. It appears that these DEPN-mediated polymns. are driven toward a pseudo-stationary state that is reached after an initial period of a few minutes. During this pseudo-stationary phase, the concn. of **polymeric** radicals and that of DEPN remained essentially const., which allowed us to det. the (K) equil. const. between dormant and active species and also the rate consts. of reversible activation (kd) and deactivation (krec) for each monomer. For purposes of comparison, a series of polymns. were simulated using the PREDICI package: both exptl. and simulated data were found to fall in rather good agreement.

ST styrene butyl acrylate radical **polymn** kinetic mechanism; acyclic phosphonylated nitroxide radical **polymn** kinetic mechanism

IT Polymerization kinetics (living, radical; kinetics and mechanism of controlled radical **polymn.** of styrene and Bu **acrylate** in the presence of acyclic phosphonylated nitroxide)

IT 141-32-2 188526-94-5

RL: MOA (Modifier or additive use); USES (Uses)
(kinetics and mechanism of controlled radical **polymn.** of styrene and Bu **acrylate** in the presence of acyclic phosphonylated nitroxide)

IT 100-42-5, Styrene, reactions

RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(kinetics and mechanism of controlled radical **polymn.** of styrene and Bu **acrylate** in the presence of acyclic phosphonylated nitroxide)

RE.CNT 72 THERE ARE 72 CITED REFERENCES AVAILABLE FOR THIS RECORD

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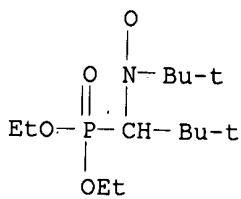
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IT 188526-94-5

RL: MOA (Modifier or additive use); USES (Uses)
(kinetics and mechanism of controlled radical polymer. of
styrene and Bu acrylate in the presence of acyclic
phosphonylated nitroxide)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)



L32 ANSWER 44 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:282694 HCAPLUS
 DN 133:43858
 TI N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide as counter radical in the controlled free radical polymerization of styrene: kinetic aspects
 AU Lacroix-Desmazes, Patrick; Lutz, Jean-Francois; Boutevin, Bernard
 CS UMR 5076 (CNRS), Ecole Nationale Supérieure de Chimie de Montpellier, Montpellier, 34296, Fr.
 SO Macromolecular Chemistry and Physics (2000), 201(6), 662-669
 CODEN: MCHPES; ISSN: 1022-1352
 PB Wiley-VCH Verlag GmbH
 DT Journal
 LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 AB The controlled free radical polymn. of styrene with N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide (DEPN) as counter radical was studied. Polymns. were performed in bulk, with a DEPN-capped polystyryl as alkoxyamine initiator, in the presence of an excess of DEPN nitroxyl free radicals. Kinetics of the polymn. were followed at 115, 125, and 130.degree.C. The equil. rate const. $K = kd/kc$ of exchange between dormant and active species was detd. exptl. from the slope of $\ln([styrene]_0/[styrene])$ vs. time. The obtained Arrhenius relation was the following: $K(\text{mol . cndot. L-1}) = 1.45 \cdot 10^7 \exp(-113.5 \text{ kJ . cndot. mol-1/RT})$, i.e., $K = 1.9 \cdot 10^{-8} \text{ mol . cndot. L-1}$ at 125.degree.C. This result is consistent with a much faster polymn. of styrene with DEPN than with Tempo as nitroxyl counter radical ($K = 2.1 \cdot 10^{-11} \text{ mol . cndot. L-1}$ at 125.degree.C detd. previously by Fukuda).
 ST styrene polymn kinetics nitroxide counter radical
 IT Polymerization catalysts
 (radical; nitroxide counter radical in controlled radical polymn. of styrene)
 IT Polymerization kinetics
 (radical; of styrene in presence of nitroxide counter radical)
 IT 188526-94-5
 RL: CAT (Catalyst use); USES (Uses)
 (counter radical in controlled radical polymn. of styrene)
 IT 78-67-1, AIBN 9003-53-6D, Polystyrene, nitrooxy deriv.-terminated
 RL: CAT (Catalyst use); USES (Uses)
 (initiator in controlled radical polymn. of styrene)
 IT 100-42-5, Styrene, reactions
 RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
 (kinetics of controlled radical polymn. in presence of nitroxide counter radical)
 IT 9003-53-6P, Polystyrene
 RL: SPN (Synthetic preparation); PREP (Preparation)

(prepn. by controlled radical polymn. in presence of nitroxide counter radical)

RE.CNT 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

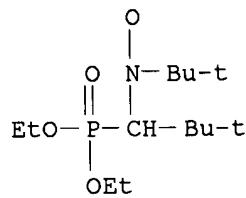
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IT 188526-94-5

RL: CAT (Catalyst use); USES (Uses)
(counter radical in controlled radical polymn. of styrene)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)



L32 ANSWER 45 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:240740 HCAPLUS
 DN 132:265597
 TI Radical **polymerization** in the presence of multiple stable
 free radicals
 IN Senninger, Thierry; Robin, Sophie; Gnanou, Yves
 PA Elf Atochem S.A., Fr.
 SO Eur. Pat. Appl., 23 pp.
 CODEN: EPXXDW
 DT Patent
 LA French
 IC ICM C08F004-00
 ICS C08F002-38; C08F293-00
 CC 35-3 (Chemistry of Synthetic High **Polymers**)
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 992514	A1	20000412	EP 1999-118539	19990920
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	FR 2784111	A1	20000407	FR 1998-12477	19981006
	KR 2000028845	A	20000525	KR 1999-42819	19991005
	JP 2000109512	A2	20000418	JP 1999-285329	19991006
	CN 1251841	A	20000503	CN 1999-123908	19991006
	US 6509428	B1	20030121	US 1999-413755	19991006
PRAI	FR 1998-12477	A	19981006		

AB **Polymn.** of .gtoreq.1 monomer in the presence of .gtoreq.2 stable
 free radicals occurs synergistically; i.e., with greater
 productivity than the av. of the productivities obtained with each of the
 stable **free radicals** sep. Thus, **polymn.** of
 3.45 .times. 10-2 mol styrene at 125.degree. in the presence of AIBN 9
 .times. 10-5, TEMPO 9 .times. 10-5, and Me3CN(O.cntdot.)CH(CMe3)P(O)(OEt)2
 (DEPN) 9 .times. 10-5 mol reached 70% conversion in 5 h, compared with 95%
 or 5%, resp., when the TEMPO was replaced by DEPN or vice versa. The
 polystyrene showed Mw/Mn 1.2 in each case. For **polymn.** of Bu
 acrylate initiated by the polystyrene formed as above,
 the conversion after 5 h was greater for the combination of DEPN and TEMPO
 than for either radical alone.

ST stable **free radical** effect **polymn**;
 synergistic effect stable **free radical**

IT **Polymerization**
 (block, radical; radical **polymn.** in the presence of multiple
 stable **free radicals**)

IT **Polymerization**
 (radical; radical **polymn.** in the presence of multiple stable
 free radicals)

IT Radicals, uses

RL: CAT (Catalyst use); USES (Uses)
 (stable; radical polynn. in the presence of multiple stable
 free radicals)

IT 2154-68-9, 3-Carboxy-2,2,5,5-tetramethyl-1-pyrrolidinyloxy 2226-96-2,
 4-Hydroxy-2,2,6,6-tetramethyl-1-piperidinyloxy 2516-92-9 2564-83-2,
 TEMPO 2896-70-0, 2,2,6,6-Tetramethyl-4-oxo-1-piperidinyloxy 22690-04-6
 95407-69-5, 4-Methoxy-2,2,6,6-tetramethyl-1-piperidinyloxy
 188526-94-5 188707-72-4 258354-63-1
 261527-17-7 263355-91-5 263355-92-6

RL: CAT (Catalyst use); USES (Uses)
 (radical polynn. in the presence of multiple stable
 free radicals)

IT 9003-53-6P, Polystyrene 110772-34-4P, Butyl acrylate-styrene
 block copolymer

RL: IMF (Industrial manufacture); PREP (Preparation)
 (radical polynn. in the presence of multiple stable
 free radicals)

IT 78-67-1, AIBN

RL: CAT (Catalyst use); USES (Uses)
 (radical polynn. in the presence of multiple stable
 free radicals and)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

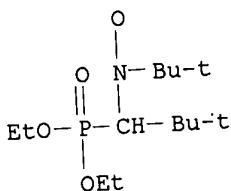
RE

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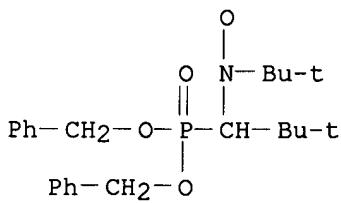
IT 188526-94-5 188707-72-4 258354-63-1
 261527-17-7 263355-91-5 263355-92-6

RL: CAT (Catalyst use); USES (Uses)
 (radical polynn. in the presence of multiple stable
 free radicals)

RN 188526-94-5 HCPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)

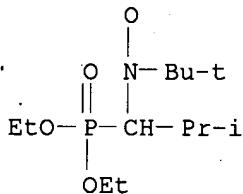


RN 188707-72-4 HCPLUS
 CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl
 1,1-dimethylethyl (9CI) (CA INDEX NAME)



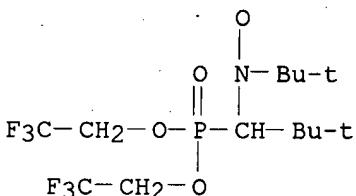
RN 258354-63-1 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2-methylpropyl 1,1-dimethylethyl (9CI)
(CA INDEX NAME)



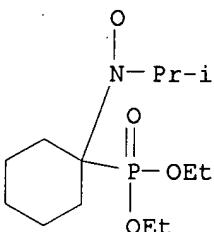
RN 261527-17-7 HCPLUS

CN Nitroxide, 1-[bis(2,2,2-trifluoroethoxy)phosphinyl]-2,2-dimethylpropyl
1,1-dimethylethyl (9CI) (CA INDEX NAME)



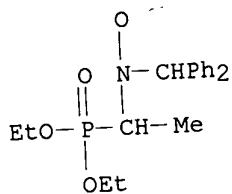
RN 263355-91-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)cyclohexyl 1-methylethyl (9CI) (CA INDEX
NAME)



RN 263355-92-6 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)ethyl diphenylmethyl (9CI) (CA INDEX
NAME)



L32 ANSWER 46 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 2000:74962 HCPLUS

DN 132:222921

TI Acyclic .beta.-Phosphonylated Nitroxides: A New Series of Counter-Radicals for "Living"/Controlled Free Radical Polymerization

AU Grimaldi, Sandra; Finet, Jean-Pierre; Le Moigne, Francois; Zeghdacui, Abdelhamid; Tordo, Paul; Benoit, Didier; Fontanille, Michel; Gnanou, Yves
CS Laboratoire Structure et Reactivite des Espes Paramagnetiques UMR 6517 Chimie Biologie et Radicaux Libres, CNRS Universites d'Aix-Marseille I et III, Marseille, 13397, Fr.
SO Macromolecules (2000), 33(4), 1141-1147
CODEN: MAMOBX; ISSN: 0024-9297

PB American Chemical Society

DT Journal

LA English

CC 35-3 (Chemistry of Synthetic High Polymers)
AB Oxidn. of .alpha.-(*N*-alkylamino)phosphonic acid esters, carrying one or

two alkyl groups as substituents on their .alpha.-carbon, by m-chloroperbenzoic acid afforded the corresponding stable .beta.-phosphonylated nitroxides. The nitroxides derived from .alpha.-mono-tert-Bu .alpha.-alkylaminophosphonic acid esters are stable compds. despite the presence of a hydrogen atom on the .alpha.-carbon bound to the nitroxyl group. The ESR study of these nitroxides in soln. showed that this .beta.-hydrogen atom lies in the nodal plane to the nitroxyl function. These .beta.-phosphonylated nitroxides efficiently control the free radical polymn. reaction of styrene, with a much faster rate of propagation than that obsd. in TEMPO-mediated systems.

ST acyclic phosphonylated nitroxide counter radical living controlled polymn
IT ESR (electron spin resonance)

IT Polymerization catalysts

(acyclic .beta.-phosphonylated nitroxides as counter-radicals

for living/controlled free radical polymn

.)

IT Nitroxides

RL: CAT (Catalyst use); USES (Uses)

(acyclic .beta.-phosphonylated nitroxides as counter-radicals

for living/controlled free radical polymn

.)

IT 188526-94-5P 188707-72-4P 258354-63-1P

261527-14-4P 261527-15-5P 261527-16-6P

261527-17-7P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);

USES (Uses)

(acyclic .beta.-phosphonylated nitroxides as counter-radicals

for living/controlled free radical polymn

.)

IT 9003-53-6P, Polystyrene
 RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
 (acyclic .beta.-phosphonylated nitroxides as counter-radicals for living/controlled free radical polymn.)

IT 227000-10-4P 258354-81-3P 258354-83-5P 261527-06-4P 261527-09-7P
 261527-10-0P 261527-11-1P 261527-12-2P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (intermediate; acyclic .beta.-phosphonylated nitroxides as counter-radicals for living/controlled free radical polymn.)

IT 75-07-0, Acetaldehyde, reactions 75-64-9, tert-Butylamine, reactions 630-19-3, Pivalaldehyde 13716-45-5, Diethyl trimethylsilyl phosphite 17176-77-1, Dibenzyl phosphite 92466-70-1, Bis(2,2,2-trifluoroethyl) phosphite
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (starting material; acyclic .beta.-phosphonylated nitroxides as counter-radicals for living/controlled free radical polymn.)

RE.CNT 67. THERE ARE 67 CITED REFERENCES AVAILABLE FOR THIS RECORD

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IT 188526-94-5P 188707-72-4P 258354-63-1P

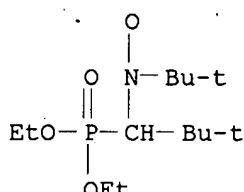
261527-14-4P 261527-15-5P 261527-17-7P

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);

USES (Uses)

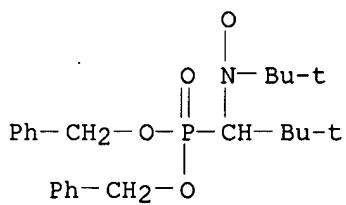
(acyclic .beta.-phosphonylated nitroxides as counter-radicals
 for living/controlled free radical polymn
 .)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)

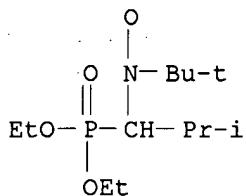
RN 188707-72-4 HCPLUS

CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl
1,1-dimethylethyl (9CI) (CA INDEX NAME)



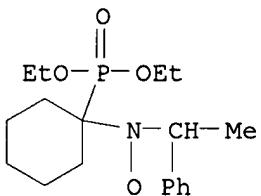
RN 258354-63-1 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2-methylpropyl 1,1-dimethylethyl (9CI)
(CA INDEX NAME)



RN 261527-14-4 HCAPLUS

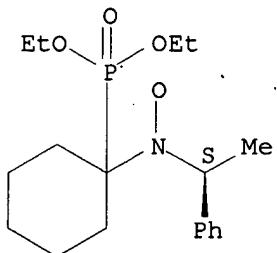
CN Nitroxide, 1-(diethoxyphosphinyl)cyclohexyl 1-phenylethyl (9CI) (CA INDEX NAME)



RN 261527-15-5 HCAPLUS

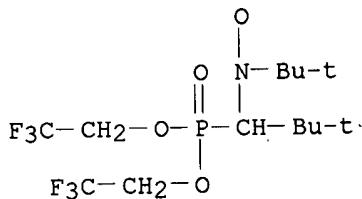
CN Nitroxide, 1-(diethoxyphosphinyl)cyclohexyl (1S)-1-phenylethyl (9CI) (CA INDEX NAME)

Absolute stereochemistry. Rotation (+).



RN 261527-17-7 HCAPLUS

CN Nitroxide, 1-[bis(2,2,2-trifluoroethoxy)phosphinyl]-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 47 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 2000:34601 HCAPLUS
 DN 132:79008
 TI Emulsion **polymerization** in the presence of a stable **free radical**
 IN Charleux, Bernadette; Lansalot, Muriel; Pirri, Rosangela; Vairon,
 Jean-Pierre; Denie, Sandrine
 PA Elf Atochem S.A., Fr.
 SO Eur. Pat. Appl., 21 pp.
 CODEN: EPXXDW
 DT Patent
 LA French
 IC ICM C08F004-00
 ICS C08F002-38
 CC 35-4 (Chemistry of Synthetic High **Polymers**)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 970973	A1	20000112	EP 1999-112156	19990624
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	FR 2781486	A1	20000128	FR 1998-8916	19980710
	FR 2781486	B1	20000908		
	FR 2781487	A1	20000128	FR 1999-3941	19990330
	FR 2781487	B1	20001208		
	KR 2000011514	A	20000225	KR 1999-27050	19990706
	US 6353065	B1	20020305	US 1999-347573	19990706
	CN 1241577	A	20000119	CN 1999-111298	19990710
	JP 2000044610	A2	20000215	JP 1999-229995	19990712
PRAI	FR 1998-8916	A	19980710		
	FR 1999-3941	A	19990330		
AB	Radically polymerizable monomers are emulsion- polymd. in the presence of stable free radicals , so that the aq. phase contains .gtoreq.50% water and the org. phase contains .ltoreq.50% monomer. This process gives polymers with low polydispersity and good linearity, and the manuf. of block polymers is possible. Thus, emulsion- polymn. of a mixt. contg. water 23.9, ethylene glycol (I) 71.7, Na styrenesulfonate 28.72, Na ₂ HPO ₄ 0.1835, 4,4'-azobis(cyano-4-pentanoic acid) 0.44, N-tert-butyl-1-diethylphosphono-2,2-dimethylpropylnitroxide (II) 0.8, and NaOH 0.106 g 48 h at 125.degree. under N, and polymn. of a mixt. contg. water 7.5, I 22.5, resulting polymer 5, styrene 1, and II 0.8 g 24 h at 125.degree. gave a block copolymer.				
ST	emulsion block polymn stable free radical ; styrenesulfonate emulsion block polymn tertiary butyldiethylphosphonodi methylpropylnitroxide; tertiary				

butyldiethylphosphonodi methylpropylnitroxide emulsion block
polymn styrene

IT **Polymerization**
(block; emulsion polymn. in the presence of stable free radicals)

IT Amine oxides
Radicals, uses
RL: NUU (Other use, unclassified); USES (Uses)
(emulsion polymn. in the presence of stable free radicals)

IT **Polymerization**
(emulsion; emulsion polymn. in the presence of stable free radicals)

IT 585-71-7, 1-Bromoethylbenzene
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkoxylated free radical precursor; emulsion polymn. in the presence of stable free radicals)

IT 9003-53-6P, Polystyrene 39307-76-1P, Sodium styrenesulfonate-styrene copolymer 105935-35-1P, Butadiene-methyl methacrylate-styrene block copolymer 106399-43-3P, Butadiene-methyl methacrylate block copolymer 106911-77-7P, Methyl methacrylate-styrene block copolymer 108501-19-5P, Butyl acrylate-methyl methacrylate block copolymer 110772-34-4P, Butyl acrylate-styrene block copolymer 119708-91-7P, 2-Ethylhexyl acrylate-styrene block copolymer 121917-49-5P, Ethyl acrylate-methyl methacrylate block copolymer 178034-20-3P, Sodium styrenesulfonate-styrene block copolymer 185510-41-2P, Perfluoroctyl acrylate-styrene block copolymer 254100-02-2P, 2-Hydroxyethyl acrylate-methyl methacrylate block copolymer 254100-03-3P, Methyl methacrylate-perfluoroctyl acrylate block copolymer 254100-04-4P, Behenyl acrylate-perfluoroctyl acrylate block copolymer 254100-05-5P 254100-06-6P, Methyl methacrylate-octyl acrylate block copolymer
RL: IMF (Industrial manufacture); PREP (Preparation)
(emulsion polymn. in the presence of stable free radicals)

IT 188526-94-5
RL: NUU (Other use, unclassified); USES (Uses)
(emulsion polymn. in the presence of stable free radicals)

IT 224575-62-6P
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP (Preparation); USES (Uses)
(stable-free-radical generator; emulsion polymn. in the presence of stable free radicals).

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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(5) Anon; AU 571240 B 1988 HCPLUS
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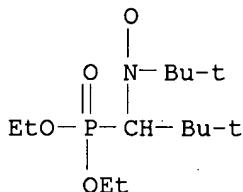
- (9) Anon; EP 0621878 A 1994 HCAPLUS
- (10) Anon; CN 1087349 A 1994 HCAPLUS
- (11) Anon; CA 2126670 A 1994 HCAPLUS
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- (13) Anon; US 5322912 A 1994 HCAPLUS
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- (15) Anon; MX 9307085 A 1994
- (16) Anon; WO 9411412 A 1994 HCAPLUS
- (17) Anon; US 5401804 A 1995 HCAPLUS
- (18) Anon; US 5549998 A 1996 HCAPLUS
- (19) Anon; BR 9305751 A 1997 HCAPLUS

IT **188526-94-5**

RL: NUU (Other use, unclassified); USES (Uses)
 (emulsion **polymn.** in the presence of stable **free radicals**)

RN 188526-94-5 HCAPLUS

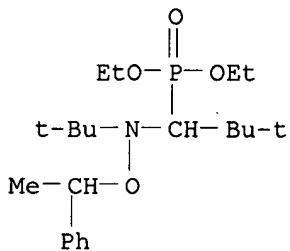
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)

IT **224575-62-6P**

RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP (Preparation); USES (Uses)
 (stable-**free-radical** generator; emulsion **polymn.** in the presence of stable **free radicals**)

RN 224575-62-6 HCAPLUS

CN Phosphonic acid, [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



L32 ANSWER 48 OF 59 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:558862 HCAPLUS

DN 132:152191

TI Polystyrene/polyacrylate block copolymer synthesis using an acyclic .beta.-phosphonylated nitroxide

AU Robin, Sophie; Gnanou, Yves

CS Laboratoire de Chimie des Polymères Organiques, ENSCPB-CNRS Université
 Bordeaux, Talence, 33402, Fr.

SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1999), 40(2), 387-388
 CODEN: ACPPAY; ISSN: 0032-3934

PB American Chemical Society, Division of Polymer Chemistry

DT Journal

LA English

CC 35-3 (Chemistry of Synthetic High **Polymers**)

AB Well defined Bu acrylate-styrene diblock copolymers could be synthesized in the presence of N-tert-butyl-N-[1-(diethylphosphono)-2,2-dimethylpropyl]nitroxide and AIBN by either order of addn. of monomers, provided that the exptl. conditions were finely tuned.

ST styrene butyl **acrylate** block **polymn**; nitroxide chain growth controller block **polymn**

IT Polymerization (block, living; using phosphonylated nitroxide as chain growth controller)

IT Polymerization catalysts (block, radical; AIBN using phosphonylated nitroxide as chain growth controller)

IT Polymerization (block, radical; using phosphonylated nitroxide as chain growth controller)

IT Macromonomers
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (in radical block polymn. using phosphonylated nitroxide as chain growth controller)

IT 78-67-1, AIBN
 RL: CAT (Catalyst use); USES (Uses)
 (catalyst for radical block **polymn**. of Bu **acrylate** with styrene)

IT 110772-34-4P, Butyl acrylate-styrene block copolymer
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (diblock; radical prepn. using phosphonylated nitroxide as chain growth controller)

IT 188526-94-5
 RL: CAT (Catalyst use); USES (Uses)
 (radical block polymn. using phosphonylated nitroxide as chain growth controller)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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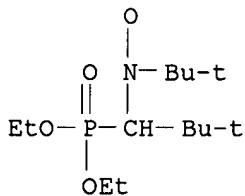
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IT 188526-94-5
 RL: CAT (Catalyst use); USES (Uses)
 (radical block polymn. using phosphonylated nitroxide as chain growth controller)

controller)
RN 188526-94-5 HCPLUS
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)



L32 ANSWER 49 OF 59 HCPLUS COPYRIGHT 2003 ACS
AN 1999:558829 HCPLUS
DN 132:152236
TI Controlled **free-radical polymerization** of styrene in the presence of an alkoxyamine based on a .beta.-phosphonylated nitroxyl radical: Comparison with bicomponent systems nitroxide/initiator
AU Lutz, Jean-Francois; Lacroix-Desmazes, Patrick; Boutevin, Bernard
CS UPRESA-CNRS, Montpellier, 34296, Fr.
SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1999), 40(2), 319-320
CODEN: ACPPAY; ISSN: 0032-3934
PB American Chemical Society, Division of Polymer Chemistry
DT Journal
LA English
CC 35-4 (Chemistry of Synthetic High **Polymers**)
AB Controlled radical **polymn.** has become a major aspect of polymer synthesis. Stable **free radical polymn.** (SFRP) using stable nitroxyl radicals is one of the most popular techniques developed so far. Unimol. alkoxyamine or nitroxide/initiator bicomponent systems can be used to obtain well defined polymers. A comparison between the kinetic behavior as well as the living character of the bulk **polymn.** of styrene for a monocomponent alkoxyamine system (di-Et [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]phosphonate (I)) and bicomponent peroxide initiator/nitroxide (N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl radical (II)) systems is presented. Very good control of the **polymn.** of styrene can be obtained using either I or a bicomponent AIBN/II system even if the efficiency of initiation is a little bit lower in the case of the bicomponent system. Moreover, the **polymn.** rate is not zero order in I, indicating that the kinetic contribution of thermal initiation is low. The use of benzoic anhydride as an accelerating agent does not give any improvement in the systems.
ST radical polymn styrene phosphonylated nitroxyl radical; nitroxide peroxide radical polymn styrene
IT **Polymerization**
Polymerization kinetics
(radical; controlled **free-radical**
polymn. of styrene in presence of alkoxyamine based on .beta.-phosphonylated nitroxyl radical and bicomponent nitroxide/peroxide initiator systems)
IT 9003-53-6P, Polystyrene
RL: SPN (Synthetic preparation); PREP (Preparation)

(controlled free-radical polynn. of styrene in presence of alkoxyamine based on .beta.-phosphonylated nitroxyl radical and bicomponent nitroxide/initiator systems)

IT 80-43-3, Dicumyl peroxide 188526-94-5 224575-62-6
RL: CAT (Catalyst use); USES (Uses)
(controlled free-radical polynn. of styrene in presence of alkoxyamine based on .beta.-phosphonylated nitroxyl radical and bicomponent nitroxide/peroxide initiator systems)

IT 93-97-0, Benzoic anhydride
RL: CAT (Catalyst use); USES (Uses)
(controlled free-radical polynn. of styrene in presence of alkoxyamine based on .beta.-phosphonylated nitroxyl radical and bicomponent nitroxide/peroxide initiator systems in relation to)

IT 78-67-1, AIBN
RL: CAT (Catalyst use); USES (Uses)
(polynn. catalyst; controlled free-radical polynn. of styrene in presence of alkoxyamine based on .beta.-phosphonylated nitroxyl radical and bicomponent nitroxide/peroxide initiator systems)

RE.CNT 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

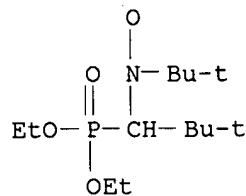
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IT 188526-94-5 224575-62-6

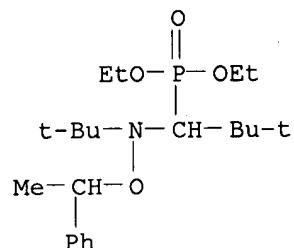
RL: CAT (Catalyst use); USES (Uses)

(controlled free-radical polynn. of styrene in presence of alkoxyamine based on .beta.-phosphonylated nitroxyl radical and bicomponent nitroxide/peroxide initiator

systems)
RN 188526-94-5 HCAPLUS
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI). (CA INDEX NAME)



RN 224575-62-6 HCAPLUS
CN Phosphonic acid, [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



L32 ANSWER 50 OF 59 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:558828 HCAPLUS
DN 132:152182
TI Nitroxide-mediated controlled **free-radical** emulsion
polymerization of styrene
AU Lansalot, M.; Charleux, B.; Vairon, J.-P.; Pirri, R.; Tordo, P.
CS Laboratoire de ChimieMacromoleculaire, Universite Pierre et Marie Curie,
Paris, 75252, Fr.
SO Polymer Preprints (American Chemical Society, Division of Polymer
Chemistry) (1999), 40(2), 317-318
CODEN: ACPPAY; ISSN: 0032-3934
PB American Chemical Society, Division of Polymer Chemistry
DT Journal
LA English
CC 35-3 (Chemistry of Synthetic High **Polymers**)
Section cross-reference(s): 67
AB The N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) stable
nitroxide radical (SG1) was used to control the **free-**
radical **polymn.** of styrene in an aq. medium. Batch
mini-emulsion and emulsion **polymn.** processes were used; the
initiators are AIBN and water sol. redox initiator K2S2O8 / Na2S2O5. One
of the advantages of a mini-emulsion process is that it enables to use
organosol. initiators, while maintaining small particle size. Various
initiating systems were used and the reaction temp. was 90-130.degree..
The kinetics and the evolution of mol. wt. vs. monomer conversion were
compared with those obsd. in bulk **polymn.**

ST butyldiethylphosphonodimethylpropyl nitroxide radical control polymn styrene

IT Particle size
(butyldiethylphosphonodimethylpropyl nitroxide-mediated control of free-radical emulsion polymn. of styrene in aq. media)

IT Polymerization catalysts
(emulsion, radical; butyldiethylphosphonodimethylpropyl nitroxide-mediated control of free-radical emulsion polymn. of styrene in aq. media)

IT 9003-53-6P, Polystyrene
RL: SPN (Synthetic preparation); PREP (Preparation)
(butyldiethylphosphonodimethylpropyl nitroxide-mediated control of free-radical emulsion polymn. of styrene in aq. media)

IT 78-67-1, AIBN 7681-57-4, Sodium pyrosulfite (Na₂S₂O₅) 7727-21-1
RL: CAT (Catalyst use); USES (Uses)
(radical polymn. catalyst; butyldiethylphosphonodimethylpropyl nitroxide-mediated control of free-radical emulsion polymn. of styrene in aq. media)

IT 188526-94-5
RL: CAT (Catalyst use); USES (Uses)
(radical polymn. control catalyst; butyldiethylphosphonodimethylpropyl nitroxide-mediated control of free-radical emulsion polymn. of styrene in aq. media)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

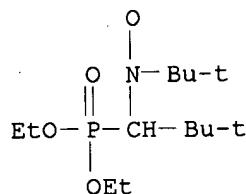
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IT 188526-94-5

RL: CAT (Catalyst use); USES (Uses)
(radical polymn. control catalyst; butyldiethylphosphonodimethylpropyl nitroxide-mediated control of free-radical emulsion polymn. of styrene in aq. media)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



DN 132:152181
 TI Characteristics of phosphonylated nitroxides and alkoxyamines used in controlled/ "living" radical polymerizations
 AU Le Mercier, C.; Gaudel, A.; Siri, D.; Tordo, P.; Marque, S.; Martschke, R.; Fischer, H.
 CS Laboratoire Structure et Reactivite des Espes Paramagnetiques, CNRS et Universites d'Aix-Marseille, Marseille, 13397, Fr.
 SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1999), 40(2), 313-314
 CODEN: ACPPAY; ISSN: 0032-3934
 PB American Chemical Society, Division of Polymer Chemistry
 DT Journal
 LA English
 CC 35-3 (Chemistry of Synthetic High **Polymers**)
 Section cross-reference(s): 67
 AB The kinetic parameters were detd. of the reversible cleavage of alkoxyamines obtained by trapping the 1-phenyl-Et radical with TEMPO and N-tert-butyl-N-(1-diethylphosphono-2,2-dimethylpropyl) nitroxide [t-BuN(O)CH(t-Bu)P(O)(OEt)₂]. The alkoxyamines are derivs. of the N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl radical, e.g., 2,2,6,6-Tetramethyl-1-(1-phenylethoxy)piperidine (I) and [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl] di-Et phosphonate (II). The equil. const. (K_{eq}) is much larger (460 times) for II than for I. The x-ray structure of I and II and the BDE [bond dissociation energy] of the NO-C bond were detd.
 ST phosphonyl nitroxide radical structure dissociation energy; radical **polymn** control nitroxyl alkoxyamine reversible cleavage; styrene **acrylate** radical **polymn** control alkoxyamine cleavage
 IT Bond cleavage
 (cleavage kinetics and structure of phosphonylated nitroxides and alkoxyamines controlling radical polymn. mechanisms)
 IT Bond energy
 (dissocn.; cleavage kinetics and structure of phosphonylated nitroxides and alkoxyamines controlling radical polymn. mechanisms)
 IT Polymerization catalysts
 (living, radical; cleavage kinetics and structure of phosphonylated nitroxides and alkoxyamines controlling radical polymn. mechanisms)
 IT 78-67-1, AIBN
 RL: CAT (Catalyst use); USES (Uses)
 (cleavage kinetics and structure of phosphonylated nitroxides and alkoxyamines controlling radical polymn. mechanisms)
 IT 2564-83-2, TEMPO 102261-92-7, N-Benzyl-2,2,6,6-tetramethylpiperidine 154554-67-3, 2,2,6,6-Tetramethyl-1-(1-phenylethoxy)piperidine 157462-14-1 **188526-94-5**, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl radical **224575-61-5** **224575-62-6**
 RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (cleavage kinetics and structure of phosphonylated nitroxides and alkoxyamines controlling radical polymn. mechanisms.)
 IT 9003-53-6P, Polystyrene
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (cleavage kinetics and structure of phosphonylated nitroxides and alkoxyamines controlling radical polymn. mechanisms)
 RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
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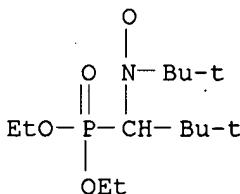
IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxyl radical 224575-61-5 224575-62-6

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(cleavage kinetics and structure of phosphorylated nitroxides and alkoxyamines controlling radical polymn. mechanisms)

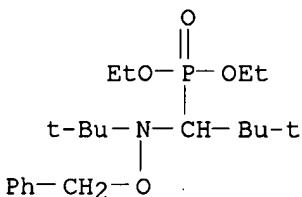
RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



RN 224575-61-5 HCPLUS

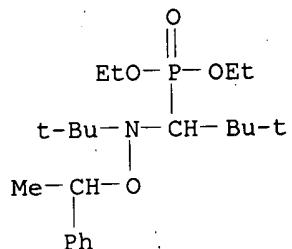
CN Phosphonic acid, [1-[(1,1-dimethylethyl)(phenylmethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



RN 224575-62-6 HCPLUS

CN Phosphonic acid, [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-

dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)



L32 ANSWER 52 OF 59 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:237002 HCAPLUS

DN 130:297115

TI Graft copolymer obtained by **free-radical**
polymerization with stable **free radicals**, its
preparation and uses

IN Bertin, Denis; Boutevin, Bernard; Robin, Jean-Jacques

PA Elf Atochem S.A., Fr.

SO Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

DT Patent

LA French

IC ICM C08L051-00

ICS C08F291-00; C08F291-18; C08F004-36

CC 35-4 (Chemistry of Synthetic High **Polymers**)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 906937	A1	19990407	EP 1998-402420	19981001
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	FR 2769316	A1	19990409	FR 1997-12341	19971003
	FR 2769316	B1	19991203		
	JP 11171946	A2	19990629	JP 1998-279874	19981001
	US 6335401	B1	20020101	US 1998-164717	19981001
	CA 2246653	AA	19990403	CA 1998-2246653	19981002

PRAI FR 1997-12341 A 19971003

AB A graft copolymer, useful as a compatibilizer, an emulsifier, or an adhesive, is prep'd. by reaction of a polymer having (hydro)peroxide substituents and/or peroxide crosslinks with .gtoreq.1 monomer in the presence of a stable free radical which acts to terminate the grafted chains. Thus, a low-d. polyethylene with no.-av. mol. wt. 10,000 was treated with O3 at 40.degree. to introduce 10-5 mol peroxide groups per g, and this was heated with styrene for 20 h at 125.degree. in the presence of 2,2,6,6-tetramethyl-1-piperidinyloxy to give a graft copolymer contg. 60 wt.% styrene, together with a lesser amt. of polystyrene, which was removed by extn. in cold xylene and by pptn. of the graft copolymer from acetone.

ST ethylene styrene graft copolymer manuf; graft copolymer stable free radical; peroxide functional polymer grafting

IT Polymer blend compatibilizers
(graft copolymer prep'n. as compatibilizer for polymer blends)IT **Polymerization**

(graft; graft copolymer prepn. by free-radical
polymn. in presence of stable free radicals
)

IT Ozonization
(in graft copolymer prepn. by free-radical
polymn. in presence of stable free radicals
)

IT Radicals, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(stable; graft copolymer prepn. by free-radical
polymn. in presence of)

IT 9002-88-4 9003-53-6
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(graft copolymer prepn. as compatibilizer for polymer blends contg.)

IT 2564-83-2, 2,2,6,6-Tetramethyl-1-piperidinyloxy 3229-53-6,
2,2,5,5-Tetramethyl-1-pyrrolidinyloxy 61015-94-9 188526-94-5
188707-72-4 200345-02-4 200345-03-5

200345-05-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(graft copolymer prepn. by free-radical
polymn. in presence of)

IT 106826-12-4P, Ethylene-styrene graft copolymer
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(graft copolymer prepn. by free-radical
polymn. in presence of stable free radicals
)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

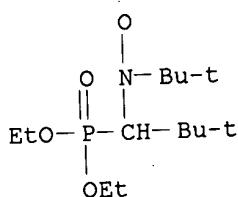
RE

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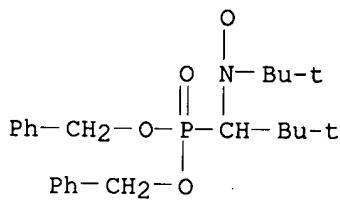
IT 188526-94-5 188707-72-4 200345-03-5

200345-05-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(graft copolymer prepn. by free-radical
polymn. in presence of)

RN 188526-94-5 HCPLUS
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)

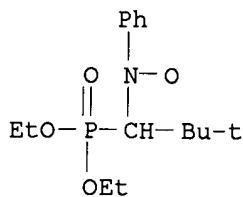


RN 188707-72-4 HCPLUS
CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl
1,1-dimethylethyl (9CI) (CA INDEX NAME)



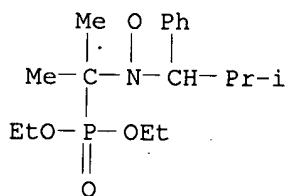
RN 200345-03-5 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl phenyl (9CI) (CA INDEX NAME)



RN 200345-05-7 HCAPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-1-methylethyl 2-methyl-1-phenylpropyl (9CI) (CA INDEX NAME)



L32 ANSWER 53 OF 59 HCAPLUS COPYRIGHT 2003 ACS

AN 1999:234532 HCAPLUS

DN 131:45141

TI Development of a Universal Alkoxyamine for "Living" **Free Radical Polymerizations**

AU Benoit, Didier; Chaplinski, Vladimir; Braslau, Rebecca; Hawker, Craig J.

CS NSF Center for Polymeric Interfaces and Macromolecular Assemblies, IBM Almaden Research Center, San Jose, CA, 95120-6099, USA

SO Journal of the American Chemical Society (1999), 121(16), 3904-3920
CODEN: JACSAT; ISSN: 0002-7863

PB American Chemical Society

DT Journal

LA English

CC 35-3 (Chemistry of Synthetic High **Polymers**)AB Examn. of novel alkoxyamines has demonstrated the pivotal role that the nitroxide plays in mediating the "living" or controlled **polymn.** of a wide range of vinyl monomers. Surveying a variety of different alkoxyamine structures led to .alpha.-hydrido derivs. based on a 2,2,5-trimethyl-4-phenyl-3-azahexane-3-oxy, 1, skeleton which were able to

control the polymn. of styrene, acrylate, acrylamide, and acrylonitrile based monomers. For each monomer set, the mol. wt. could be controlled from 1000 to 200,000 amu with polydispersities typically 1.05-1.15. Block and random copolymers based on combinations of the above monomers could also be prep'd. with similar control. In comparison with 2,2,6,6-tetramethylpiperidinoxyl (TEMPO), these new systems represent a dramatic increase in the range of monomers that can be polymd. under controlled conditions and overcome many of the limitations assocd. with nitroxide-mediated "living" free radical procedures. Monomer selection and functional group compatibility now approach those of ATRP-based systems.

ST alkoxyamine mediated living radical polymn styrene acrylate; catalyst alkoxyamine living radical polymn styrene acrylate

IT Amines, preparation

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(alkoxy; alkoxyamine-mediated living free radical polymn. of styrene and acrylic compds.)

IT Polymerization

Polymerization catalysts

(living, radical; alkoxyamine-mediated living free radical polymn. of styrene and acrylic compds.)

IT	132416-36-5	154554-67-3	183194-54-9	188491-78-3	219908-58-4
	219908-68-6	224575-62-6	224967-65-1	227000-59-1	
	227000-69-3	227000-79-5	227000-80-8	227000-81-9	227000-83-1
	227000-84-2	227000-85-3	227000-86-4	227000-87-5	227000-88-6
	227000-89-7	227000-90-0			

RL: CAT (Catalyst use); USES (Uses)

(alkoxyamine-mediated living free radical polymn. of styrene and acrylic compds.)

IT 9003-49-0P, Poly(n-butyl acrylate) 9003-53-6P, Polystyrene
 9003-54-7P, Acrylonitrile-styrene copolymer 25014-41-9P,
 Acrylonitrile homopolymer 25034-86-0P, Methyl
 methacrylate-styrene copolymer 25119-83-9P, Acrylic
 acid-butyl acrylate copolymer 25567-76-4P,
 Acrylonitrile-butyl acrylate copolymer 25767-47-9P,
 n-Butyl acrylate-styrene copolymer 26222-39-9P,
 2-(N,N-Dimethylamino)ethyl methacrylate-styrene copolymer
 26793-34-0P, N,N-Dimethylacrylamide homopolymer 29760-26-7P,
 N,N-Dimethylacrylamide-styrene copolymer 32409-50-0P, Butyl
 acrylate-2-hydroxyethyl acrylate copolymer
 33775-27-8P, Butyl acrylate-2-(2-methoxyethoxy)ethyl
 acrylate copolymer 50733-27-2P, Butyl acrylate-N,N-
 dimethylacrylamide copolymer 64171-34-2P, Butyl acrylate
 -glycidyl acrylate copolymer 106392-91-0P,
 2,2,3,3,4,4,4-Heptafluorobutyl acrylate-styrene copolymer
 110772-34-4P, Butyl acrylate-styrene block copolymer
 226999-65-1P, Butyl acrylate-2,2,3,3,4,4,4-heptafluorobutyl
 acrylate copolymer

RL: SPN (Synthetic preparation); PREP (Preparation)

(alkoxyamine-mediated living free radical polymn. of styrene and acrylic compds.)

IT 75-77-4, reactions 76-39-1 78-84-2, Isobutyraldehyde 79-46-9,
 2-Nitropropane 108-86-1, Phenyl bromide, reactions 344-04-7,
 Bromopentafluorobenzene 402-43-7, p-Trifluoromethylphenyl bromide
 554-12-1, Methyl propionate 585-71-7, 1-Bromoethylbenzene 594-70-7,

2-Methyl-2-nitropropane 630-19-3, Pivalaldehyde 762-04-9, Diethyl phosphite 937-14-4, m-Chloroperbenzoic acid 1432-48-0 1592-20-7, p-Vinylbenzyl chloride 2154-70-3 16302-61-7 174153-12-9
175093-20-6 182190-80-3

RL: RCT (Reactant); RACT (Reactant or reagent)
(in alkoxyamine prepn.; alkoxyamine-mediated living **free radical polymn.** of styrene and **acrylic** compds.)

IT 53544-93-7P 56859-56-4P 61015-94-9P 72331-68-1P 85664-55-7P
140116-61-6P 140116-62-7P **188526-94-5P** 226999-86-6P
226999-92-4P 226999-99-1P 227000-10-4P 227000-16-0P 227000-22-8P
227000-39-7P 227000-46-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(in alkoxyamine prepn.; alkoxyamine-mediated living **free radical polymn.** of styrene and **acrylic** compds.)

RE.CNT 101 THERE ARE 101 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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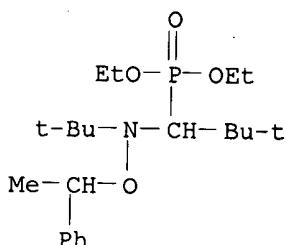
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IT 224575-62-6

RL: CAT (Catalyst use); USES (Uses)
 (alkoxyamine-mediated living free radical
 polymn. of styrene and acrylic compds.)

RN 224575-62-6 HCPLUS

CN Phosphonic acid, [1-[(1,1-dimethylethyl)(1-phenylethoxy)amino]-2,2-dimethylpropyl]-, diethyl ester (9CI) (CA INDEX NAME)

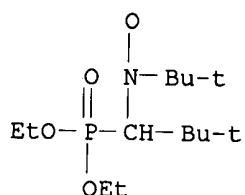


IT 188526-94-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (in alkoxyamine prepn.; alkoxyamine-mediated living free radical polymn. of styrene and acrylic compds.)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 54 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 1998:111881 HCPLUS

DN 128:141095

TI Controlled/living free-radical polymerization
 of styrene and n-butyl acrylate in the presence of a novel
 asymmetric nitroxyl radical

AU Benoit, D.; Grimaldi, S.; Finet, J. P.; Tordo, P.; Fontanille, M.; Gnanou, Y.

CS Laboratoire de Chimie des Polymeres Organiques UMR Centre National de la Recherche Scientifique, Ecole Nationale Supérieure de Chimie et de Physique de Bordeaux, Université Bordeaux I, Talence, 33402, Fr.

SO ACS Symposium Series (1998), 685(Controlled Radical Polymerization),
225-235
CODEN: ACSMC8; ISSN: 0097-6156
PB American Chemical Society
DT Journal
LA English
CC 35-3 (Chemistry of Synthetic High Polymers)
AB A novel nitroxyl radical contg. a di-Et phosphonate group in the
.beta.-position to the nitrogen atom has been used as **radical**
scavenger in **free radical polymn.** In the
presence of this stable **free-radical**, styrene and Bu
acrylate undergo controlled living **polymn.** The samples
of polystyrene and poly (Bu **acrylate**) obtained exhibit a narrow
Poisson-type distribution of molar masses.
ST living radical **polymn** styrene butyl **acrylate**;
phosphonate nitroxyl radical **polymn** styrene **acrylate**
IT Polymerization catalysts
Polymerization catalysts
(living, **radical**; controlled living **free-**
radical polymn. of styrene and Bu **acrylate**
in presence of di-Et phosphonate group-contg. nitroxyl radical)
IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl
nitroxyl **radical**
RL: CAT (Catalyst use); USES (Uses)
(controlled living **free-radical polymn.**
of styrene and Bu **acrylate** in presence of di-Et phosphonate
group-contg. nitroxyl radical)
IT 9003-49-0P, Poly(butyl **acrylate**) 9003-53-6P, Polystyrene
RL: SPN (Synthetic preparation); PREP (Preparation)
(controlled living **free-radical polymn.**
of styrene and Bu **acrylate** in presence of di-Et phosphonate
group-contg. nitroxyl radical)
RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl

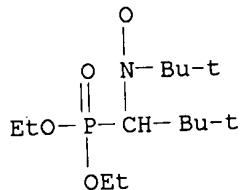
nitroxyl radical

RL: CAT (Catalyst use); USES (Uses)

(controlled living free-radical polymn.

(of styrene and Bu acrylate in presence of di-Et phosphonate group-contg. nitroxyl radical)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
(9CI) (CA INDEX NAME)

L32 ANSWER 55 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 1998:1511 HCPLUS

DN 128:61941

TI Preparing telechelic 1,3-diene oligomers by controlled free radical polymerization of 1,3-dienes in the presence of a stable free radical

IN Boutevin, Bernard; Cerf, Martine; Pradel, Jean-Laurent
PA Elf Atochem S.A., Fr.; Boutevin, Bernard; Cerf, Martine; Pradel,
Jean-LaurentSO PCT Int. Appl., 27 pp.
CODEN: PIXXD2

DT Patent

LA French

IC ICM C08F004-28

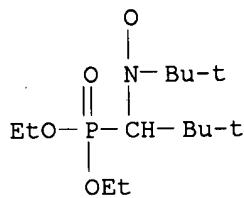
ICS C08F002-38; C08F136-04

CC 35-4 (Chemistry of Synthetic High Polymers)

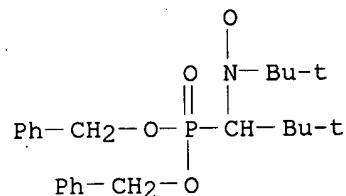
FAN.CNT 1	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9746593	A1	19971211	WO 1997-FR973	19970603	
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM					
RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG					
CA 2229978	AA	19971211	CA 1997-2229978	19970603	
AU 9730982	A1	19980105	AU 1997-30982	19970603	
EP 842198	A1	19980520	EP 1997-926089	19970603	
R: DE, FR, GB, IT					
CN 1198750	A	19981111	CN 1997-191040	19970603	
BR 9702291	A	19990720	BR 1997-2291	19970603	
JP 11511202	T2	19990928	JP 1997-500271	19970603	
PRAI FR 1996-6875	A	19960604			
WO 1997-FR973	W	19970603			

AB The free radical polymn. of .gtoreq.1
1,3-diene with a heat-sensitive polymn. initiator such as H₂O₂ or an azodinitrile in the presence of a stable nitroxide radical yields telechelic 1,3-diene oligomers, which can be used in the prepn. of block copolymers. Thus, 1 mol butadiene was introduced into a reactor contg. 30% H₂O₂ 9.07, 2,2,6,6-tetramethylpiperidinyloxy 1.88, and iso-PrOH 33.7 g at -40.degree., and the reactor was heated at 130.degree. for 4 h to give HO- and tetramethylpiperidinyloxy-terminated polybutadiene with 80% 1,4- and 20% 1,2-structure and no.-av. mol. wt. 1700. Heating this product with Zn powder in AcOH gave a hydroxy-terminated polybutadiene of no.-av. mol. wt. 1700 and functionality 2, whereas polymn. with H₂O₂ in the absence of the nitroxide led to higher mol. wt. and functionality 2.35.

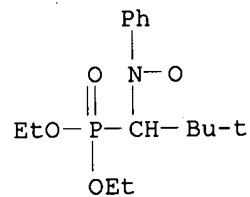
ST butadiene oligomerization nitroxide radical; telechelic polybutadiene
IT prepn oligomeric
IT Polymerization
(oligomerization; prepn. of telechelic diene oligomers)
IT Polyurethanes, preparation
RL: PNU (Preparation, unclassified); PREP (Preparation)
(polybutadiene-; prepn. and reaction of telechelic diene oligomers)
IT Nitroxides
RL: RCT (Reactant); RACT (Reactant or reagent)
(stable; in prepn. of telechelic diene oligomers)
IT 106107-54-4P, Butadiene-styrene block copolymer
RL: IMF (Industrial manufacture); PREP (Preparation)
(diblock; prepn. and reaction of telechelic diene oligomers)
IT 2564-83-2, 2,2,6,6-Tetramethylpiperidinyloxy 3229-53-6,
2,2,5,5-Tetramethylpyrrolidinyloxy 61015-94-9 188526-94-5
188707-72-4 200345-02-4 200345-03-5 200345-04-6
200345-05-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(in prepn. of telechelic diene oligomers)
IT 78-67-1, AIBN 7722-84-1, Hydrogen peroxide (H₂O₂), uses
RL: CAT (Catalyst use); USES (Uses)
(initiator; in prepn. of telechelic diene oligomers)
IT 9003-17-2DP, Polybutadiene, hydroxy- and tetramethylpiperidinyloxy- terminated
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(oligomeric; prepn. of telechelic diene oligomers)
IT 101-68-8DP, polymer with hydroxy-terminated polybutadiene
RL: PNU (Preparation, unclassified); PREP (Preparation)
(prepn. and reaction of telechelic diene oligomers)
IT 188526-94-5 188707-72-4 200345-03-5
200345-05-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(in prepn. of telechelic diene oligomers)
RN 188526-94-5 HCPLUS
CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl (9CI) (CA INDEX NAME)



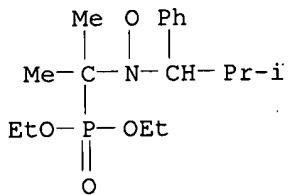
RN 188707-72-4 HCPLUS

CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl
1,1-dimethylethyl (9CI) (CA INDEX NAME)

RN 200345-03-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl phenyl (9CI) (CA
INDEX NAME)

RN 200345-05-7 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-1-methylethyl 2-methyl-1-phenylpropyl
(9CI) (CA INDEX NAME).

L32 ANSWER 56 OF 59 HCPLUS COPYRIGHT 2003 ACS

AN 1997:224565 HCPLUS

DN 126:238706

TI Controlled free-radical polymerization in
the presence of a novel asymmetric nitroxyl radical

AU Benoit, Didier; Grimaldi, Sandra; Finet, Jean Pierre; Tordo, Paul;
Fontanille, Michel; Gnanou, Yves
CS Lab. Chimie Polymers Organiques, UMR CNRS-ENSCPB-Univ. Bordeaux I,
Talence, 33402, Fr.
SO Polymer Preprints (American Chemical Society, Division of Polymer
Chemistry) (1997), 38(1), 729-730
CODEN: ACPPAY; ISSN: 0032-3934
PB American Chemical Society, Division of Polymer Chemistry
DT Journal
LA English
CC 35-3 (Chemistry of Synthetic High **Polymers**)
AB An analog of di-tert-Bu nitroxyl (DTBN) radical, with a functional group
purposely introduced to induce both electronic and steric effects, was
used in controlled living **free-radical polynn**
. of various monomers. N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl
nitroxyl (DEPN) is a stable radical that increases the rate of
polynn. of styrene better than that mediated by DTBN, yet provides
excellent control of mol. wt. distribution to obtain polymers of low
polydispersity index. DPN also is suitable as reversible trapping agent
for alkyl **acrylates**, through fully controlled processes. Di-
and triblock copolymers based on polystyrene and poly(alkyl
acrylates) were obtained by sequential **polynn**. of the
corresponding monomers.
ST ethylphosphonodimethylpropyl nitroxyl radical inhibitor living
polynn; styrene **free radical polynn**
nitroxyl control; **acrylate polynn** polydispersity
nitroxyl radical
IT **Polymerization catalysts**
(living, **radical**, trapping agents; controlled **free-**
radical polynn. of styrene and alkyl
acrylates with asym. nitroxyl radical reversible trapping
agent)
IT **Polymerization**
Polymerization kinetics
(living, **radical**; controlled **free-radical**
polynn. of styrene and alkyl **acrylates** with asym.
nitroxyl radical reversible trapping agent)
IT Molecular weight
(polydispersity; controlled **free-radical**
polynn. of styrene and alkyl **acrylates** with asym.
nitroxyl radical reversible trapping agent)
IT **Polymerization inhibitors**
(**radical**, trapping agents; controlled **free-**
radical polynn. of styrene and alkyl
acrylates with asym. nitroxyl radical reversible trapping
agent)
IT 9003-49-0P, Poly(n-butyl **acrylate**) 9003-53-6P, Polystyrene
RL: SPN (Synthetic preparation); PREP (Preparation)
(controlled **free-radical polynn**. of
styrene and alkyl **acrylates** with asym. nitroxyl radical
reversible trapping agent)
IT 110772-34-4P, Butyl **acrylate**-styrene block copolymer
RL: SPN (Synthetic preparation); PREP (Preparation)
(diblock and triblock; controlled **free-radical**
polynn. of styrene and alkyl **acrylates** with asym.
nitroxyl radical reversible trapping agent)
IT 2406-25-9, DTBN 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-
dimethylpropyl nitroxyl **radical**

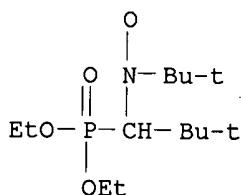
RL: CAT (Catalyst use); USES (Uses)
 (polymn. control; controlled free-radical
 polymn. of styrene and alkyl acrylates with asym.
 nitroxyl radical reversible trapping agent)

IT 188526-94-5, N-tert-Butyl-1-diethylphosphono-2,2-dimethylpropyl
 nitroxyl radical

RL: CAT (Catalyst use); USES (Uses)
 (polymn. control; controlled free-radical
 polymn. of styrene and alkyl acrylates with asym.
 nitroxyl radical reversible trapping agent)

RN 188526-94-5 HCPLUS

CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)

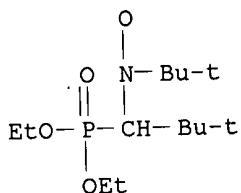


L32 ANSWER 57 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 1997:224454 HCPLUS
 DN 126:251457
 TI Synthesis and applications to living free radical
 polymerization of a new class of nitroxyl radicals
 AU Grimaldi, Sandra; Finet, Jean-Pierre; Zeghdaoui, Abdelhamid; Tordo, Paul;
 Benoit, Didier; Gnanou, Yves; Fontanille, Michel; Nicol, Pascal; Pierson,
 Jean-Francis
 CS Lab. Structure Reactivite, Universite Aix-Marseille I, Marseille, 13397,
 Fr.
 SO Polymer Preprints (American Chemical Society, Division of Polymer
 Chemistry) (1997), 38(1), 651-652
 CODEN: ACPPAY; ISSN: 0032-3934
 PB American Chemical Society, Division of Polymer Chemistry
 DT Journal
 LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 AB Styrene was subjected to living radical polymn. in the presence of
 (RO)₂P(O)CH(Bu-tert)N(Bu-tert)O.bul. (R = Et, benzyl) as chain-transfer
 agents. The control of the reaction was better than with TEMPO.
 ST nitroxyl chain transfer agent styrene polymn
 IT Chain transfer agents
 (living radical polymn. of styrene in presence of nitroxyl agents)
 IT Polymerization
 Polymerization
 (living, radical; of styrene in presence of nitroxyl chain-transfer
 agents)
 IT 188526-94-5P 188707-72-4P
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);
 USES (Uses)
 (living radical polymn. of styrene in presence of nitroxyl
 chain-transfer agents)
 IT 9003-53-6P, Polystyrene

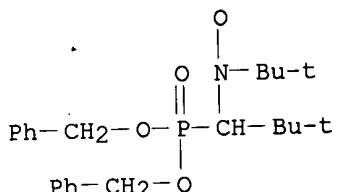
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
 (living radical polymn. of styrene in presence of nitroxyl
 chain-transfer agents)

IT 188526-94-5P 188707-72-4P
 RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation);
 USES (Uses)
 (living radical polymn. of styrene in presence of nitroxyl
 chain-transfer agents)

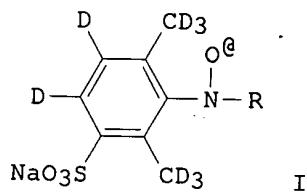
RN 188526-94-5 HCAPLUS
 CN Nitroxide, 1-(diethoxyphosphinyl)-2,2-dimethylpropyl 1,1-dimethylethyl
 (9CI) (CA INDEX NAME)



RN 188707-72-4 HCAPLUS
 CN Nitroxide, 1-[bis(phenylmethoxy)phosphinyl]-2,2-dimethylpropyl
 1,1-dimethylethyl (9CI) (CA INDEX NAME)



L32 ANSWER 58 OF 59 HCAPLUS COPYRIGHT 2003 ACS
 AN 1984:473143 HCAPLUS
 DN 101:73143
 TI Vinyl polymerization. 422. **Initiation** mechanism of uncatalyzed
 polymerization by polyethylene glycol
 AU Ouchi, Tatsuro; Hosaka, Yoshifumi; Imoto, Minoru; Konaka, Ryusei
 CS Fac. Eng., Kansai Univ., Senriyama, 564, Japan
 SO Journal of Polymer Science, Polymer Chemistry Edition (1984), 22(6),
 1507-14
 CODEN: JPLCAT; ISSN: 0449-296X
 DT Journal
 LA English
 CC 35-3 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 77
 GI



AB The **initiation** mechanism of radical **polymn.** of vinyl monomers (i.e., **acrylonitrile** [107-13-1], **acrylonitrile-d1** [91289-87-1], **methacrylonitrile** [126-98-7], Me **acrylate** [96-33-3], and Me **methacrylate** [80-62-6]) by polyethylene glycol (II) [25322-68-3] (PEG-300) in aq. soln. was studied. The **initiating** radical species, detd. by spin trapping with Na 2,4-dimethyl-3-nitrosobenzenesulfonate-d8 (III) [81734-87-4], were concluded to be generated by the H atom transfer from the monomer adsorbed at the ether group of II to the free monomer. The ESR spectra of several **initiating** radical species were assigned structure I in which R is derived from the above monomers. For example, for the **initiation** of **methacrylonitrile polymn.**, R had the structures CH₂C(CN):CH₂ and C(Me₂)CN. Assignments and mechanism were confirmed by photolysis of some model compds. (e.g., propionitrile [107-12-0] or Me propionate [554-12-1]) with H₂O₂ in the presence of III.

ST vinyl **polymn** polyoxyethylene radical trapping; spin trapping nitrobenzenesulfonate vinyl **polymn**; **acrylonitrile** polyoxyethylene **initiation** radical trapping; **methacrylonitrile** polyoxyethylene **initiation** radical trapping; **acrylate** polyoxyethylene **initiation** radical trapping; **methacrylate** polyoxyethylene **initiation** radical trapping; ESR vinyl **polymn** **initiation**

IT Spin labels
(nitroxide, reaction of, with intermediates in vinyl polymn.)

IT Photolysis
(of esters and nitriles in presence of hydrogen peroxide and nitrosobenzenesulfonate trapping agent)

IT Electron spin resonance
(of radical-trapped intermediates in vinyl polymn.)

IT Polymerization
(of vinyl monomers in presence of polyethylene glycol, **initiation** in, ESR of and radical trapping in)

IT Kinetics of polymerization
(of vinyl monomers, in presence of polyethylene glycol, ESR of and radical trapping in relation to)

IT Vinyl compounds, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(polymn. of, **initiation** in, ESR of and radical trapping in)

IT Addition reaction
(spin trapping, of intermediates in vinyl polymn. **initiation**, ESR of)

IT 91289-77-9 91289-78-0 91289-79-1 91289-80-4
91289-81-5 91289-83-7 91289-84-8 91289-85-9
91289-86-0

RL: PRP (Properties)
(ESR of, in **initiation** of polymn. in presence of polyethylene glycol)

IT 91289-82-6
 RL: PRP (Properties)
 (ESR of, in photolysis of methacrylonitrile with aq. hydrogen peroxide)

IT 25322-68-3
 RL: CAT (Catalyst use); USES (Uses)
 (catalysts, for vinyl polymn., radical intermediates from)

IT 7722-84-1, uses and miscellaneous
 RL: USES (Uses)
 (photolysis of acrylic monomers in presence of nitrosobenzenesulfonate trapping agents and, ESR spectra of products from)

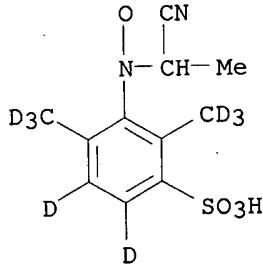
IT 107-12-0 547-63-7 554-12-1
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (photolysis of, in presence of hydrogen peroxide and nitrosobenzenesulfonate trapping agent, ESR spectra of products from)

IT 80-62-6 96-33-3 107-13-1, reactions 126-98-7 91289-87-1
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (reaction of, with nitrosobenzenesulfonate in presence of polyethylene glycol, radical observation in)

IT 81734-87-4
 RL: USES (Uses)
 (trapping agents, for radicals in initiation of polymn. of vinyl monomers)

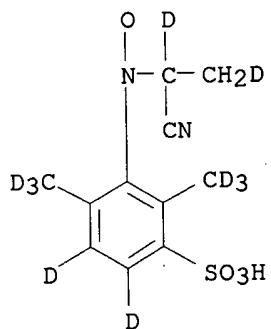
IT 91289-78-0 91289-79-1 91289-80-4
 91289-84-8 91289-85-9
 RL: PRP (Properties)
 (ESR of, in initiation of polymn. in presence of polyethylene glycol)

RN 91289-78-0 HCAPLUS
 CN Nitroxide, 1-cyanoethyl 2,6-di(methyl-d3)-5-sulfophenyl-3,4-d2, sodium salt (9CI) (CA INDEX NAME)



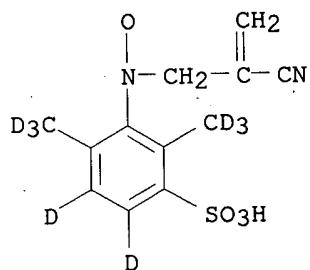
● Na

RN 91289-79-1 HCAPLUS
 CN Nitroxide, 1-cyanoethyl-1,2-d2 2,6-di(methyl-d3)-5-sulfophenyl-3,4-d2, sodium salt (9CI) (CA INDEX NAME)



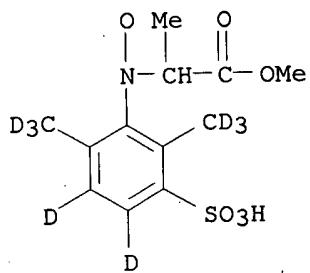
● Na

RN 91289-80-4 HCPLUS
CN Nitroxide, 2-cyano-2-propenyl 2,6-di(methyl-d3)-5-sulfophenyl-3,4-d2,
sodium salt (9CI) (CA INDEX NAME)



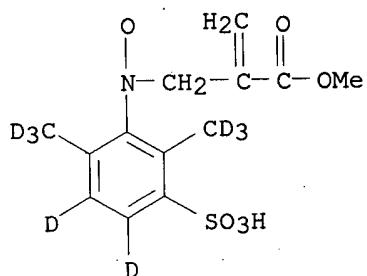
● Na

RN 91289-84-8 HCPLUS
CN Nitroxide, 2,6-di(methyl-d3)-5-sulfophenyl-3,4-d2 2-methoxy-1-methyl-2-
oxoethyl, sodium salt (9CI) (CA INDEX NAME)



● Na

RN 91289-85-9 HCPLUS
 CN Nitroxide, 2,6-di(methyl-d3)-5-sulfophenyl-3,4-d2 2-(methoxycarbonyl)-2-propenyl, sodium salt (9CI) (CA INDEX NAME)



● Na

L32 ANSWER 59 OF 59 HCPLUS COPYRIGHT 2003 ACS
 AN 1959:54056 HCPLUS
 DN 53:54056
 OREF 53:9718i, 9719a
 TI Polymerizations and polymerization catalysts. IX. Mercaptans and thiophenols as polymerization catalysts
 AU Bredereck, Hellmut; Wagner, Adolf; Rochlitz, Fritz; Iliopoulos, Miltiadis Ioannu; Kottenhahn, Alfred; Wulz, Hans Gunther
 CS Tech. Hochschule, Stuttgart, Germany
 SO Makromolekulare Chemie (1959), 29, 131-8
 CODEN: MACEAK; ISSN: 0025-116X
 DT Journal
 LA Unavailable
 CC 31 (Synthetic Resins and Plastics)
 AB Mercaptans and thiophenols initiate the block polymerization of vinyl compds. in the presence of Cl ions and O.
 IT Thiols
 (catalysts, in polymerization of vinyl compds.)
 IT Catalysts

(in polymerization, of vinyl compds., thiols as)

IT Polymerization
 (of vinyl compds., thiols as catalysts in)

IT Vinyl compounds
 (polymerization of, thiols as catalysts in)

IT Piperidine, 1-{{[1-naphthylthio]methyl}-
 Piperidine, 1-{{[2-naphthylthio]methyl}-
 (as catalysts in vinyl compd. polymerization)}

IT 1,4-Butanediol, homopolymer
 (thiols as catalysts in)

IT 79-41-4, **Methacrylic acid**
 (and esters, **polymerization of**, thiols as catalysts in)

IT 112-55-0, 1-Dodecanethiol 100875-50-1, Acetanilide, 4'-
 (piperidinomethylthio)- 103396-60-7, 1,6-Hexanediamine,
 N,N,N',N'-tetrakis[(phenylthio)methyl]- 122337-02-4, 1,6-Hexanediamine,
 N,N,N',N'-tetrakis(p-tolylthiomethyl)-
 (as catalyst in polymerization of vinyl compds.)

IT 100-53-8, .alpha.-Toluenethiol 1569-69-3, Cyclohexanethiol 1639-09-4,
 1-Heptanethiol 6258-60-2, .alpha.-Toluenethiol, p-methoxy- 13865-52-6,
 Diethylamine, N-[(phenylthio)methyl]- 14041-26-0, Diethylamine,
 N-[(p-chlorophenylthio)methyl]- 22959-43-9, Diethylamine,
 N-[(p-bromophenylthio)methyl]- 25508-57-0, Diethylamine,
 N-(p-tolylthiomethyl)- 26445-03-4, ar-Toluenethiol 58199-25-0,
 Diethylamine, N-[(1-naphthylthio)methyl]- 70227-32-6, Morpholine,
 4-(p-tolylthiomethyl)- 104176-84-3, Ethylenediamine,
 N,N,N',N'-tetrakis[(phenylthio)methyl]- 110155-22-1, Piperidine,
 1,1'-[p-phenylenebis(thiomethylene)]di- 112508-58-4, Benzylamine,
 N-cyclohexyl-N-(p-tolylthiomethyl)-
 (as catalyst in vinyl compd. polymerization)

IT 108-98-5, Benzenethiol
 (catalyst, in polymerization of vinyl compds.)

IT 75-66-1, 2-Propanethiol, 2-methyl-
 (catalysts, in vinyl compd. polymerization)

IT 79-10-7, **Acrylic acid**
 (**polymerization of** (and **acrylic acid derivatives**),
 thiols as catalysts in)

IT 107-13-1, **Acrylonitrile** 109-17-1, Tetraethylene glycol,
 dimethacrylate
 (**polymerization of**, thiols as catalysts in)

IT 15792-01-5, Dibutylamine, N-[(phenylthio)methyl]- 52716-32-2,
 Trimethylamine, 1,1'-bis(p-tolylsulfonyl)- 116602-06-3, Cyclohexylamine,
 N,N-bis(p-tolylthiomethyl)- 117876-56-9, Trimethylamine, p-tolylthio-
 119505-96-3, Ethylenediamine, N,N,N',N'-tetrakis(p-tolylthiomethyl)-
 (prepn. and use as catalyst in polymerization of vinyl compds.)

IT 25508-63-8, Piperidine, 1-(p-tolylthiomethyl)- 100618-00-6, Piperidine,
 1-[(p-methoxyphenylthio)methyl]- 108923-72-4, Methanol, p-tolylthio-
 109563-25-9, Triethylamine, 1-p-tolylthio- 110555-18-5, Cyclohexylamine,
 N-phenyl-N-(p-tolylthiomethyl)- 113977-08-5, Ethanol, 1-p-tolylthio-
 (prepn. and use as catalyst in vinyl compd. polymerization)

IT 108875-93-0, Pyrrolidine, 1-(p-tolylthiomethyl)- **114960-33-7**,
 Hydroxylamine, N-methyl-N-(p-tolylthiomethyl)- 116865-59-9, 1-Butanol,
 1-p-tolylthio-
 (prepn. of)

IT 119641-19-9, 1-Naphthylamine, N,N-bis(p-tolylthiomethyl)-
 (prepn. of, and use as catalyst in polymerization of vinyl compds.)

IT 109564-50-3, Ethylamine, N,N-bis(p-tolylthiomethyl)-
 (prepn. of, and use as polymerization catalyst for vinyl compds.)

IT **114960-33-7**, Hydroxylamine, N-methyl-N-(p-tolylthiomethyl)-

(prepn. of)
RN 114960-33-7 HCAPLUS
CN Hydroxylamine, N-methyl-N-(p-tolylthiomethyl)- (6CI) (CA INDEX NAME)

